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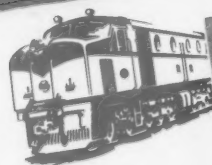
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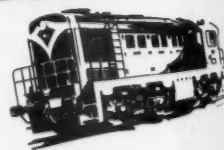
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### First-Class P.R. Job by Southern

**A**N excellent project has been devised and produced by the Public Relations Department of the Southern Region. This is a monthly broadsheet, the first number of which has been distributed to passengers travelling on the congested south-eastern area of the Region by Mr. P. A. White, South-Eastern Line Traffic Manager. The broadsheet explains that a regular monthly report to passengers will be published between now and June, when the new electric services to the Kent coast will start. It will contain details of the work's progress, a frank explanation by the Line Traffic Manager of the reasons for any delays, and what is being done to counteract them. The current issue contains a statement by Mr. White and an appeal for co-operation with railway staff by the travelling public. The need for speed restrictions on certain sections of the line is explained, a guard's journal is reproduced and explained, an illustrated forecast is given of the disruptions likely to occur through the coming rebuilding of Chatham Station, and some indication included of modernisation work completed and in hand. There is no doubt that this intelligent and well-produced piece of public relations will

produce considerable modification of public opinion relating to Southern services. If it can be backed up by prompt explanations of delays, made where possible to passengers while still *en route*, much of the criticism directed against the Region probably will die. The individual who has arrived half an hour late at his destination is in no mood to receive explanations: the psychological moment for these ideally is as near as possible the time of delay, or, as the broadsheet recognises, before it occurs. In the case of non-corridor trains it is not always possible to make an announcement to passengers during or close to the period of delay, and full advantage should be taken of station public-address systems at points nearest to the area. Whether or not such on-the-spot explanations are made to strengthen the impression made by the broadsheets of official concern at inconvenience, it must be stressed that these in themselves are excellent. Attractively-produced in tabloid form on durable paper, they make interesting reading in addition to providing facts calculated to allay public resentment.

### Railway Pay Inquiry

**T**HE latest development in connection with the railway pay inquiry is the formation of a working party or sub-committee made up of representatives of the British Transport Commission and the railway trade unions. The working party will assemble information for the Committee of Inquiry and make suggestions regarding the stations, depots, and offices to be visited by the independent investigators appointed by the committee. At this stage it is not clear in what manner, except possibly in size, the new committee will differ from the existent Railway Pay Advisory Committee which was formed of representatives from Commission and unions to give general guidance to the independent Committee of Inquiry. The term "working party" would appear to indicate a certain degree of practical approach, but, in the absence of evidence to the contrary, one would assume this also to be true of the advisory committee. In any event, the degree of practicality cannot be attempted to any great extent, for the essence and value of the railway pay inquiry is that it is independently conducted. The unbiased onlooker may perhaps be forgiven for wondering whether the weighty rule of Parkinson's Law is beginning to operate.

### The Pullman Car Company in 1958

**B**ECAUSE of petrol rationing in the early months of 1957, road traffic was curtailed bringing additional revenue to the railways generally. It is therefore unreasonable to compare the gross receipts of the Pullman Car Co. Ltd. for 1958 with the 1957 figures, but in the last three months of 1958, coinciding with the introduction of a new Pullman service to Sheffield, receipts showed an encouraging recovery. The annual report shows that gross receipts for the year ended December 31, 1958, decreased from £889,507 in 1957, to £844,050, but working expenses also decreased to £738,102 (£760,036), leaving a net profit of £63,256 (£71,484). Every endeavour is being made by the company to economise on working expenses, but it is becoming increasingly evident that it is not possible to pass on increased costs if its traffics are to be maintained. For this reason, Pullman facilities have been withdrawn from some Southern Region multiple-unit electric trains in off-peak hours. The same ordinary dividend has been recommended as for last year. The programme of replacement of part of the company's rolling stock is in hand: 44 cars will be delivered by Metropolitan Cammell Carriage & Wagon Co. Ltd. early next year. The report states that Sir John Elliot, Chairman, London Transport Executive; Mr. F. D. M. Harding, General Manager, and Mr. E. J. Morris, Secretary, Pullman Car Co. Ltd., have accepted invitations to join the board.

### Government Interference in Bolivia

**B**RITISH-OWNED railways have created much of the wealth of South America, and those which remain in British ownership are essential to the prosperity of the

communities which they serve. Among them the metre-gauge Antofagasta (Chili) & Bolivia Railway is one of the most efficient railways of its kind in the world. It is notable for its development and user of oil-fired steam locomotives and for the conversion of many miles of line from Antofagasta to Oruro, in Bolivia, from 2 ft. 6 in. to metre gauge, to afford through running with other lines in Bolivia and with Argentina. The railway attains some of the highest altitudes in the world with adhesion working. Elsewhere in this issue are recorded briefly the circumstances which led the company last week to intimate that it would be compelled to cease operations in Bolivia. Interference by the Government of that country has included stabilisation of uneconomic charges and a ban on dismissal of redundant staff, so that a staff surplus of 30 per cent has had to be retained. No further news had been received from Bolivia as we went to press. A decision by the Government to take over the line without the British senior staff would harm all concerned.

### Reorganisation in Algeria

**B**y an ordinance dated February 6, the Algerian Government established a corporation, the Société Nationale des Chemins de Fer Français d'Algérie (S.N.C.F.A.), which has replaced the special department known as the Administration des Chemins de Fer Algériens (C.F.A.), set up on January 1, 1939. The capital of the new organisation has been contributed equally by the State and the French National Railways. The staff of the S.N.C.F.A. have the same legal position and pension rights as employees of the French National Railways. Pensions are guaranteed by the State. This is the third major organisational change in recent years. In the past two decades or so the railways in Algeria underwent various modifications as to their administration. In November, 1933, the two systems then in existence, the State Railways and the Paris Lyons & Mediterranean Railway (Algeria), were placed under a new joint administration, the Algerian State Railways, which functioned until the reorganisation in January, 1939, since when the Algerian railways have been a State undertaking, with financial autonomy.

### Western Region Diesel Designs

**T**HE application by the Western Region of British Railways of hydraulic transmission to diesel locomotives and the accommodation within the restricted British loading gauge of all the equipment, or its equivalent, of the Krauss-Maffei V.200 locomotive, 10 in. higher and 16 in. broader, are some of the many points in a paper by Mr. R. A. Smeddle, Chief Mechanical & Electrical Engineer, Western Region. It was read yesterday to the Western Region London Lecture & Debating Society at Paddington. He describes also problems encountered in the design and building for the Western Region of the North British 2,000-h.p. and 1,000-h.p. locomotives equipped with M.A.N. engines and Voith transmissions. The pioneer part played by the Western Region in designing, building, and maintaining the three types of diesel multiple-unit train, for express, secondary and cross-country, and branch and suburban services, also is outlined. Mr. Smeddle mentions the stress-body principle in railcar construction, adopted at Swindon, and some of the difficulties encountered in design, aggravated by the necessity to build new vehicles quickly under the modernisation plan without time to complete all the investigations desirable to improve products.

### A Valuable Industrial Film

**T**HE increasing use of electric traction throughout wide areas of the world and the number of railways which now use alternating current at the local industrial frequency, lends topical interest to a well-produced film sponsored by British Insulated Callender's Construction Co. Ltd. In full colour and with an informative commentary, this film shows the planning, design and instal-

lation of overhead equipment for the 25 kV. 50-cycle per second system adopted for many lines in Great Britain. The first contract for this work was awarded to the B.I.C.C. group by the British Transport Commission, which gave permission for parts of the film to be made on its tracks. The film is designed primarily for overseas exhibition and it merits a wide distribution. After dealing with the basic design of the equipment, survey of the tracks and testing of fittings, it shows the erection of the equipment. A particularly interesting feature of the film is the newly developed mechanical plant, shown in use as each phase of the work is depicted, from the setting up of the stores depot to the final checking of the completed equipment.

### Diesel Operation in Persia

**T**HE turning over to diesel traction of all passenger and of 90 per cent of goods traffic on the Persian State Railways within two years was prompted by the search for the operating economies inherent in diesel traction and the need to eliminate losses on steam working. The reduction of the number of steam locomotives from 250 in 1955 to 35 at the end of last year, acquisition of 120 General Motors "G 12" 1,425-b.h.p. main-line diesel-electric locomotives, arrangements for servicing and maintaining the diesel power, and the closing down of nearly all the steam sheds with their costly locomotive water installations are described in a paper by Mr. A. H. Khan, Deputy Director, Mechanical Engineering, of the Railway Division of the Pakistan Ministry of Communications, to the Central Technical Institute of the North Western Railway. In 1957, with 110 steam and 70 main-line diesel locomotives, the operating ratio was 73 per cent, against 76 per cent for 1955. Mr. Khan emphasises that the economies were made possible by the rapid conversion to diesel, though many of the steam engines displaced still had a long useful life. The 50 General Motors diesel locomotives delivered last year are reported to have cost £57,000 each. Even with the interest payable on the loans for acquiring these, the Persian State Railways claim that the changeover has been remunerative.

### Encouraging Early Morning Travel

**T**HERE is no case for early morning fares as a welfare measure, when the transport undertaking bears the cost of a charitable concession to those who are assumed to be poor because they travel early. Another aspect is that of encouraging travel early in the day so as to afford maximum user of rolling stock. Early journeys to work when keeping, say, factory hours involve early travel home. It has been suggested that some residential passenger services could be made more remunerative by increasing the number of trips made by train sets in the morning and evening; and that such travel could be promoted by appropriate fares in the early period. There is much to be said for increasing rolling stock user in some circumstances. As most season ticket rates already are low, it is doubtful whether even lower rates for early travel would be remunerative. There might often be advantages in spreading peak hours. What is desirable is freedom for railway managements to use their commercial judgment in selling travel at the rates calculated by them to promise the best results.

### Continental Type Crossing Barriers

**T**HE objection by the local authority to a Continental-style barrier at a level crossing near Barking, Essex, is on the ground that this type of barrier is dangerous. At this crossing the road traverses two tracks of the London, Tilbury & Southend Line of the Eastern Region. Swing gates of the usual British type shut off the railway tracks when the crossing is opened for road traffic. The Continental barrier now proposed drops into the horizontal position when closed to road traffic, and does not prevent access to the tracks when opened for the road. This factor and the ease with which children can get underneath the closed barrier are alleged to make it unsafe. The line in question is being quadrupled and electrified, and the fact



that four tracks will have to be crossed instead of two, and the delays to road vehicles caused by the future more intensive electric train service have prompted a demand for a bridge. The standard British gate is not proof against a determined child. Other things being equal, such as the type of warning device and lighting, the Continental barrier is no less safe than the British gate. That it has resulted in economies is shown by that installed at Warthill, Yorkshire, in the North Eastern Region.

### Automatic Operation of New York Underground

**A**UTOMATIC working of trains is to be tested on a section of underground line between Times Square and the Grand Central Station, New York City Transit Authority, according to Mr. Charles Patterson, Chairman of the Authority. This pilot project could be accomplished in less than a year at a cost of some \$1,000,000. The present rolling stock, tracks, and platforms could be used without any great modification. The entire operation would be automatic and controlled by electronic and mechanical devices installed in the cars, on the platforms, and on the tracks. The trains would be dispatched by an automatic mechanism into which the desired schedule would be fed. Complete automation of the underground system would mean the elimination of 90 per cent of the 3,100 motormen and 75 per cent of the platform staff now employed by the Transit Authority. A protest has already been made by the Transport Workers' Union. The idea of automatic train operation is not new, although the high costs involved and the redundancy problem has so far prevented its adoption on a large scale.

### A Damaged Point Tongue

**T**HE derailment at Borough Market Junction, Southern Region, on August 12, 1958, which caused great dislocation of traffic along the routes affected, arose from the worn condition of the facing points in the up local line where the routes to Charing Cross and Cannon Street diverge. Curves are sharp and the traffic very heavy, resulting in a high rate of wear on the left-hand rail on which the joggle, or recess, in which the point tongue should rest for the right-hand route had disappeared from the head, leaving the top of the tongue unsupported against side thrust. As will be seen from our summary in this issue of Colonel W. P. Reed's report, the tongue became battered and eventually offered a ramp up which a wheel flange could run. The worn switch was of carbon steel, though manganese steel ordinarily is used at the location, as there had been for a time some difficulty in obtaining the completed material. Wear had been noticeably increased since many of the electric trains had been strengthened to 10 cars and diesel services introduced. Colonel Reed thinks that the permanent way inspector, who two days earlier had indeed decided that renewal was required, misjudged the seriousness of the situation and should have arranged for that to be done some time earlier.

### Earlier Borough Market Derailments

**O**N January 7, and again 11 days later on January 18, 1892, passenger trains running to Cannon Street became derailed very close to this spot at Borough Market Junction. The consequences of the first accident were fairly serious and in both cases a vehicle was overturned towards the viaduct parapet, damaging the Cannon Street distant signal. Major-General Hutchinson attributed the derailments to the running of a coach carried on six-wheel bogies immediately behind a much lighter one, tending to force the latter off the line on the sharp curve towards the City. The facing points and the track generally were in good condition and no defect could be found in engines or vehicles. A peculiar feature of the ground equipment was that the points were locked by a rotary wedge mechanism, probably Brady's, actuated by the signal wire, but for the Cannon Street route only. There were no detectors, as that term is now understood. The locking bar worked with the points and was not long enough to

cover certain vehicles by then in service. General Hutchinson recommended bringing this equipment up to date, although with a daily total of over 150 movements over the points, the majority towards Cannon Street at that period, no accident had occurred at them for 20 years. In 1892 very many trains ran to Cannon Street and reversed there before going on to Charing Cross.

### Appointments to the Commission

**T**HREE important changes in the membership of the British Transport Commission were announced by the Minister of Transport & Civil Aviation last week-end. The vacancy occasioned by the death of Mr. James Watkins is filled by the appointment of Mr. K. W. C. Grand, General Manager of the Western Region of British Railways. Lord Rusholme, who has served with distinction as a Member of the Commission since its inception under the Transport Act of 1947 and also as Chairman of the London Midland Area Board since the beginning of 1955, is to retire on September 30; he will be succeeded as a full-time Member of the Commission by Major-General G. N. Russell, who is at present Chairman of the Board of Management of British Road Services and a Member of the Eastern Area Board.

Lord Rusholme's service with the Commission in many ways has been typical of that of the several other Members who have achieved success and distinction in industry and who have given generously of their time, energies and wide knowledge to further the interests of the transport system of this country. His close association and detailed acquaintance with the important Midlands area, and particularly Manchester, have been frequently of great value to his colleagues on the Commission and to the London Midland Region, as has his knowledge of industry and commerce from the traders' viewpoint. In his chairmanship of the London Midland Area Board he has preserved a sure sense of balance between the functions of administration and executive management. In both his principal transport capacities he will be missed.

The new appointments to the Commission will be widely welcomed, especially at the present critical stage of its affairs. There can be no doubt that they will enhance both the strength and the prestige of that body. Both Mr. Grand and General Russell are men of strong personality, who have demonstrated over long periods their ability to inspire confidence and loyalty of a quite unusual order in their organisations. Both have had very sound grounding in transport management and administration, and each has been outstandingly successful—under conditions of great difficulty—in his respective sphere. Both have retained to an unusual degree in these times a spirit of enterprise and independence of thought—and often action—which is of the greater value because of its rarity.

The gain of the B.T.C. will be a loss to the Western Region. Mr. Grand has held his present office, or its equivalent, for eleven years, and before that had been Assistant General Manager since 1941. He is the only serving General Manager with so close a link with pre-nationalisation top management, and as such his departure to the Commission must mark the close of an era. The whole of his railway career has been with the Region and the Great Western Railway, which from its earliest times has maintained a greater sense of unity, cohesion and loyalty to tradition than any of the other railway systems of the country. The other railway companies which formed the basis of the present Regions were themselves born of amalgamations of sizable railways. Amalgamation with the G.W.R. was far more in the nature of absorption, and much the same could be said of transfers of personnel to the Western Region since nationalisation. That in itself has arisen from firmly based loyalty and tradition. No one can know better than the Chairman of the British Transport Commission the value of these qualities or be more aware that they attach to regiments rather than to armies. He has indeed done much to revive and foster them in the Regions after the setbacks they received in the early years of nationalisation.

## Railway Deficiencies

AT the end of the last war the British railways were in urgent need of a vast programme of expenditure to make good the effects of deferred maintenance and renewals as well as the overworking of all components of the systems during the period of hostilities. For some five years of quite abnormal working it had been necessary to adopt a "make-do-and-mend" policy not only because of the urgency of the times, but also because of the insufficiency of men and materials to carry out even pre-war normal work on the equipment and installations. It had been expected that as soon as the war ended, high priority would be accorded a home railway rehabilitation plan, not only in justice to the then companies or a little later, their successors, but also in the light of national transport needs.

In the event, the railway administration found its plans constantly put back as priority was given for supplies of men, materials and finance to other sectors of enterprise. The policies of successive governments were gravely restrictive and every kind of reason from scarcity to anti-inflation was adduced to check the efforts of the railways to go ahead with schemes which had been drawn up, in some cases before the war. That, indeed, is why much of the Railway Modernisation Plan now in course of fruition contains substantial elements of plans made by the old railway companies and of the Railway Executive set up under the original Act of 1947 to nationalise the lines. It is just because too little was done for so long that many of the difficulties being faced at the present time prove so intractable.

In *The Sunday Times* last week-end Sir Philip Warter, Chairman of the Southern Area Board and a Member of the British Transport Commission, replied very cogently to criticisms of current railway deficiencies which had been made editorially by that newspaper. He refuted as wholly false the premise that the B.T.C. was sitting back and waiting for railway modernisation to solve its problems at some future time. Sir Philip Warter does not attempt to gloss over everything in the way of deficiencies which occur on the railways, but he trenchantly draws attention to a fact which is all too often overlooked by the public—and we may add by Parliament—when criticisms are levelled at railway operation. This is that the greater part of the fixed equipment on British Railways is at least a hundred years old and is totally inadequate to deal with modern requirements. It is in fact the direct result of a long period of neglect and financial starvation. That is why a large-scale programme of modernisation is now necessary and why a great deal of the money has to be spent on civil engineering, signalling and telecommunications work, apart from the more readily visible re-equipment with electric and diesel locomotives and modern coaching stock. These measures, he emphasises, will lead progressively to better time-keeping, greater cleanliness and more efficient services.

Sir Philip Warter goes on to deal with a number of other points, such as unpunctuality, redecoration of stations, and refreshment rooms, and gives instances of what is being done to overcome difficulties. He adds very pertinently: "One of the most important factors in any big organisation is the morale of the staff. Criticism of their faults and deficiencies is quite wholesome. On the other hand, credit should be given for what they are doing, as otherwise much of the progress that is being made in staff relationships will be destroyed." He suggests that reference might have been made to the big improvement in local services in the North, Midlands, Eastern Counties and Hampshire, as the result of dieselisation, and the marked increase in traffics which has ensued. There is already an improvement in the express freight services and many firms are beginning to recognise it. The mechanisation of freight depots is also resulting in quicker and safer handling of traffic.

In the course of his letter Sir Philip Warter points out that many things can be improved, but "we cannot improve all of them, everywhere, at once." He and his colleagues are confident that, given time, they can give the

country a modern and efficient railway system. They are dependent on keeping the goodwill of the public meanwhile.

As would be expected of a newspaper of the standing of *The Sunday Times*, Sir Philip Warter's letter was given equal prominence to that of the original leading article. The difficulty which arises in matters of this kind is twofold. The reply to the original strictures never really "catches up" for the early impression has been made and is not easily eradicated. In the public mind the newspaper leader is accorded greater weight, particularly in a serious and responsible organ, because of its impartiality of origin, whereas a letter from a person directly associated with the organisation criticised is inevitably considered biased.

The second factor which cannot be overlooked in newspaper treatment of railway affairs is the relative ease with which news of "deficiencies in services" is obtainable as compared with information on progress or achievement—and also the comparative public interest. Members of the public or traders who feel aggrieved are wont to write their woes to newspapers in contrast to railway officers who are unlikely to communicate their achievement to other than a small circle of professional intimates.

## Diesel-Electric Locomotive Design for Export

A BID to increase sales of British-built locomotives in the 1,100-h.p. range to overseas railways of varying gauges has been made in the "Explorer," the prototype mixed-traffic diesel-electric locomotive described elsewhere in this issue. In this joint venture by the British Thomson-Houston Co. Ltd. and Lister-Blackstone Rail Traction Limited the aim has been to reduce the cost of manufacture and to shorten delivery times by combining in the basic design as many as possible of the variable characteristics. The latter in the past have resulted in special orders for locomotives to meet the requirements of different railway administrations, and, therefore, higher prices and longer deliveries because of the need to deal individually with orders. Price and delivery play an important part in securing export business, and attractive quotations and early delivery dates have won orders for a good many builders overseas who have offered all-purpose designs, economical and quick to build. The prototype is to undergo service tests on a heavily graded section in Kenya of East African Railways & Harbours.

The "Explorer," the outcome of long investigation, is intended specifically for tropical countries where maximum speeds are not high and goods traffic predominates. Features common to railways in such environments are light tracks, undulating gradient profiles, and high ambient temperatures. The gauge on a good many systems is 3 ft. 6 in. or metre; but the design, which is the prototype is on the metre gauge, can be adapted to the 5 ft. 6 in. gauge of several railways in Southern Asia and South America, using the same main frame. Adjustment of the superstructure also can be readily effected to suit loading gauges. The builders claim that the design can meet varying requirements at minimum cost. Axle loading is kept down by the Co-Co wheel arrangement and by use of castellated beams in the construction of the underframe.

The power unit is the Lister-Blackstone 12-cylinder engine, the twin crankshaft arrangement of which introduces a speed increase between the engine and generator, giving the desirable combination of slow speed engine and lightweight generator. This engine, which is the first power unit to receive a type test certificate under the B.S. 2953:1958 rating, is conservatively rated to allow for power drop at tropical temperatures. The Napier turbo-blowers meet the altitude requirements. Use of Alsthom cone rubber pivots and adjustable spring side bearers in the body suspension allows optimum riding characteristics to be selected readily for local track conditions. The proportion of load on the side bearers determines the amount of lateral damping, and by removing shims the suspension can be changed from four-point to a three-point. The Alsthom rubber-bushed radius rod anchorage of the axleboxes eliminates horn

guide wear and also reduces the side blow effect on the track.

The non-friction B.T.H. dynamic brake is particularly suitable for the long down grades which with mechanical braking cause considerable wear of brake shoes. Besides locomotive straight air brake control, automatic brakes are fitted for working air and vacuum equipped trains.

## Diesel Locomotive Design Considerations

IN attempts to reduce the weight and improve the performance of main-line diesel locomotives, engines of increasingly high specific power outputs have been used either singly or in pairs with, on the whole, satisfactory results. Any power unit with a multiplicity of fast-moving components finely proportioned with regard to the calculated loads and rubbing speeds involved, must have protective shut-down devices. For basic requirements in a single diesel engine, these can be incorporated without complicating the external controls.

In the case of twin-engine installations for main-line locomotives, there must be duplicate cab-mounted warning devices and often there is additional changeover gear for main and auxiliary services, requiring magnetic relays, pneumatic servo-mechanisms or hydraulic actuators, and sometimes a combination of all three. To reduce the skill otherwise needed by the driver and to simplify his work, further automatic controls are available to limit the speed of changeover, to depress power during transition, and to harness excessive tractive efforts. Such devices and controls greatly increase the complexity of diesel-electric main-line locomotives and of some diesel-hydraulic types, and because they are complex, add to the cost of maintenance and to the danger of failure, which latter they are designed largely to avoid. It may be argued that there is already a danger that elaborate devices to guard against all possible faults and mishandling may become an obsession with designers; and that the circuit engineer has found in the diesel locomotive a medium in which to give full expression to his creative skill.

The view that diesel locomotives need not be complicated, even although the demands are met for high performance, maximum user, operating economies, and easy handling, is expressed in a paper by Mr. T. Schur, Manager, Traction Department, Sulzer Bros. (London) Ltd., which was read earlier this week to a meeting of the Institution of Locomotive Engineers. His prescription for essential simplicity is straightforward design based on a single engine with a small number of cylinders, and thorough integration of mechanical parts designed around the power equipment. By the correct shaping of inherent machine characteristics and by arranging for the engine governor to control resistances in the generator field system and so on, there is no need for extra starting contactors, current-limiting relays or wheel-slip relays, the omission of which, he states, can only lead to beneficial results.

He claims advantages for the slower-running, in-line engine with the minimum of moving parts. Although this is of higher specific weight it has advantages, he maintains, in terms of quietness, reliability, and ease of accommodation within width-gauge requirements. He observes also that maintenance costs are more closely related to the number of cylinders than to their size.

For a railway changing over from steam to diesel-electric power, Mr. Schur believes that before steam heating is eliminated from coaching stock, rather than installing automatic train-heating boilers in new locomotives, separate boiler vans should be introduced. Diagrams used to illustrate the paper show how the space saved in a given mixed-traffic locomotive would enable a generating set of slightly larger dimensions to be installed without weight increase but with power for an extra 250 kW. This would be available for electric heating, the most efficient system, or alternatively for traction purposes on summer schedules and when hauling goods trains.

Mounting of the engine on hard rubber sound-insulating slabs is preferred by him to very soft mountings and

elaborate chocks. One advantage is that this makes unnecessary the use of highly flexible pipes between the engine and fixed installations. Frame and superstructure weight, he claims, could be reduced if further research were made into the system of integral construction with stressed-skin and main box-section longitudines used as traction-motor air ducts. This form of construction is stated to be not only stronger but less wasteful in space compared with other types, and with it, headroom for maintenance of the diesel engine can be improved. Development costs are greater, as strain-gauge tests on experimental assemblies are needed to check stresses calculated for new designs.

## Impressions of European Railways

ON his visit to Europe last autumn Mr. D. H. C. du Plessis, General Manager, South African Railways, would not have been surprised had he found the competitive approach to transport absent from railway planning. Reports from the U.S.A., varying from the downright pessimistic to the passive acceptance of the railway as something which had to be endured because it would be too costly to eliminate, had led him to expect a similar attitude in Europe.

In an article in the December, 1958, issue of the *South African Railway News* he states that the contrary is emphatically the case. Experience in the Union has many parallels in Europe. As in South Africa, it has been found in most European countries that the railway can be an efficient and indispensable part of the transport set-up and that several factors are combining to reverse the trend of recent years. During September and October he headed the South African Railways delegation to the International Railway Congress in Madrid and saw ample evidence that the railways were alive to the need of keeping abreast of present day requirements.

Valuable information, for possible application in South Africa, was obtained on mechanisation and automation in the working of marshalling yards, in which British Railways have been particularly active. He saw equally impressive improvements in signalling techniques and in the methods used to promote safety in railway working. The replacement of steam by electric or diesel traction is in line with the South African motive power policy. In South Africa the electrification of lines carrying high-density traffic forms a major part of the modernisation plan, and large orders have recently been placed with the International General Electric Company for diesel-electric locomotives.

Mr. du Plessis took the opportunity to visit railway workshops and factories engaged in the manufacture of locomotives, rolling stock, and other railway equipment. He found the improvements in work technique and equipment that had taken place since his last visit to Europe, four years before, most impressive. He gained the impression that the nations of Western Europe had in large measure regained their prewar confidence in their own economic future, as in that of Europe as a whole. Even in Austria, he states, the will to work and the determination to survive could be discerned. There is evidence of this in the extensive electrification programme and civil engineering works completed and in progress.

From what he saw, he is convinced that the South African Railways are not lagging behind. Modernisation and improvement started some years ago made good progress during 1958. Apart from electrification, much is being done to increase the capacity of several main lines. The largest of these schemes is probably that in connection with the Johannesburg-Durban main line, but work has also been carried out on the Cape Eastern and Cape Midland lines. Last year some £30,000,000 was spent on civil engineering, which includes marshalling yards and stations. Much has been done to improve signalling.

Because of skilful planning and timely execution of works, the railways in the Union have in fact reached a stage where they can accept all the traffic offering. In respect of some commodities and over certain lines, it is possible to handle more traffic than is available.



## Railway Freight Operations in 1958

(By a correspondent)

A RELIABLE survey of British Railways freight operations last year can be based on Number 13 of *Transport Statistics*, which gives results for 52 weeks to December 28. In that period 242,135,000 tons of freight-train traffic were originated, 31,303,000 tons, or 11 per cent, less than forwardings in the same weeks of 1957. Three working days completed the year, but it is improbable that the final aggregate reached 245 million tons, compared with 274 million in 1957 and 289 million in the peak year 1953. The serious nature of the recession is clear when it is stated that during the six arduous years before 1939 the former railway companies handled on an average 273 million tons a year; their lowest total was 253 million in 1933 and their highest 298 million in 1937.

At the beginning of February there is no evidence of a firm check to the downward trend of freight-train traffic. Compared with 1957, the December loss of tonnage was 1,786,000 tons, or 9 per cent, an improvement on the November loss of 3,353,000 tons, or nearly 15 per cent. In consequence receipts from freight-train traffic in December were down 7.9 per cent against 10.8 per cent in November. Merchandise carryings were 126,000 tons, or 4.5 per cent lower in December, the London Midland Region reporting an increase of 25,000 tons (3.3 per cent) and the Eastern one of 23,000 tons (5.5 per cent); the November rate of decrease in merchandise was 8.3 per cent. Evidently some modifying tendencies did not continue after the end of the year, as in four weeks to January 25 freight-train traffic receipts were 10.4 per cent lower than in 1958; merchandise accounted for a loss of £1,073,000, or 13.1 per cent.

In 52 weeks of 1958 the railways worked 18,364 million ton-miles, 2,476 million fewer than in 1957. This reduction of 11.9 per cent was spread pretty evenly over all Regions. The average haul for all classes of traffic shortened by half a mile to 70.6 miles. The train load of 146 tons was 8 tons below the 1957 figure; the Eastern train load, though it dropped by 13 tons to 166 tons, was the highest regional average. As usual, the North Eastern had the highest wagon load at starting point—11.6 tons in contrast to the all-line average of 9.7 tons. The loading of minerals and coal improved somewhat in all Regions.

With a lean traffic, the railways cut freight-train miles by 9,272,000, or 6.9 per cent, to 125,634,000. Electric train miles were reduced by 50,000 (2.9 per cent) to 1,640,000, while diesel train miles rose to 851,000 worked mainly in the Eastern and London Midland Regions. Freight-train hours were curtailed by 1,241,000 (8.5 per cent) and shunting hours by 1,097,000 (7.3 per cent). Steam freight-train speed advanced from 9.27 to 9.46 m.p.h. All Regions shared in the slight improvement. On the other hand, electric train speed dropped from 9.87 to 9.57 m.p.h. The Eastern, London Midland and Southern Regions, where nearly all the mileage is run, recorded decreases. A low diesel train speed of 6.8 m.p.h. was due to slow movement in all Regions except the Eastern, which registered a speed of 9.4 m.p.h. against 9.1 for its steam freight trains and 8.9 for electric trains.

The hourly output of freight-train operation fell by 47 points (4 per cent) to 1,126 net ton-miles. The Eastern Region was well ahead of the other five by producing 1,264 ton-miles in a train engine-hour, though that output was 85 points (6 per cent) lower than a year ago. The North Eastern's output of 1,198 also compared well with the London Midland figure of 1,177 and the Western 1,044. All Regions reported fewer wagon miles worked, the total decrease being 448,095,000 (11.4 per cent). Over the whole system the number of wagon miles worked in a train engine-hour was 214, a decrease of 8 from 1957. The London Midland and Eastern Regions exceeded that average by 11 points and the North Eastern result was 4 points higher, though 14 points below 1957.

All these statistics point to the probability of a larger share of revenue being absorbed by operating expenses. As a rule, when traffic volume and revenue decline,

expenses decrease at a lower rate. In times of stringency the significance of the operating ratio becomes outstanding. It is known that the American railroads reduced the ratio from 85.5 per cent in January, 1958, to 78.9 per cent for 11 months to November and to 77 per cent for the month of November. As our railways are in a worse state, it is desirable that similar information should be available for each quarter of the year at least.

At December 28 the railways owned 16,094 steam locomotives and had 2,449, or 15.2 per cent, under repair. The available operating stock was 12,678, a decrease of 1,293 from 1957. In the course of last year 98 new diesel (mechanical and hydraulic) locomotives were installed; in December, 31 of the total stock of 242 engines of this type were under repair—a high percentage of 12.8 per cent. The state of the comparatively new stock of diesel-electrics was almost as bad. Although 300 of the fleet of 958 only went into service in 1958, the number under repair was 116. As frequently happens, six of the stock of 72 electric locomotives were unserviceable and the solitary gas-turbine electric locomotive also was out of action. Altogether 2,603, or 15 per cent, of the total locomotive stock or 17,367 were unfit for service.

The stock of freight vehicles was reduced to 1,020,200 at the close of 1958. As nearly 51,500, or 5 per cent, of that number were under repair, about 968,700 vehicles were available for traffic, compared with 1,041,500 a year earlier. In spite of this decrease of about 7 per cent, there may have been a surplus of wagons at some points for wagon loadings last year declined by 12 per cent.

## Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

### The U.S.A. Railroad Position

February 12

SIR.—The prompt arrival of the A.A.R. statement of revenues and expenses in November and of its report on the transport situation at the end of last year confirms what was said on February 6 about the mending of the railroad position in the U.S.A. At November 30, only 12 Class 1 railroads, including the New Haven and Lehigh Valley, were in deficit. The railways, as a whole, had operating revenues for 11 months of \$8,726 million, a decrease of nearly 10 per cent from 1957. Expenses were reduced by about 9 per cent to \$6,888 million, so that the operating ratio was close on 79 per cent. Net income, after charges, was estimated at \$511 million, a decrease of 23 per cent from 1957.

At November 30, the Eastern District railroads earned (before charges) about \$95 million, 59 per cent below 1957, while the Central Western District earned \$196 million, fully 4 per cent above 1957. The coal roads in the Pocahontas Region lost about a fifth of their freight revenue in 11 months, because 1958 coal exports were 35 per cent under 1957 and about 24 per cent under 1956.

For 52 weeks to December 27, wagon loadings were 5,293,650, or nearly 15 per cent, less than in 1957 and 20 per cent below 1956. Grain was the only product to furnish an increase of 199,000 loaded wagons, or 7 per cent above 1957. Coal output was 19 per cent lower last year, though production in December was about 3 per cent higher than in 1957, and coal loadings varied at much the same rate. Ore shipments from Lake Superior ports in the 1958 season were 37.5 per cent under 1957 and wagon loadings of ore dropped by 39 per cent. Forwardings of general merchandise improved slightly towards the end of the year, but the loading of refrigerator wagons fell by over 2,000 a week last year, or nearly 8 per cent.

On January 1, the railroads owned 1,725,720 wagons, with 148,015, or 8.6 per cent under repair. They will be well advised to halve this percentage before Easter.

Yours faithfully,

YOUR CORRESPONDENT

Westminster, S.W.1



## THE SCRAP HEAP

### 2 O.R. (G.W.R. + B.R.S.) = B.T.C.

Two men who were in the same house at Rugby have just received identical promotion. They are Mr. Keith Grand, General Manager of British Railways' Western Region, and Maj.-Gen. George (generally known as Charles) Russell, both appointed whole-time members of the Transport Commission.

Since they left school their careers have lain apart. From Woolwich Russell joined the Royal Engineers.

During the war he was immersed in transport problems and in 1948 he became chairman of the Road Haulage Executive.

Mr. Grand's work has taken him to America but he has always been connected with what was, when he joined it in 1919, the G.W.R. It has suffered less from change for change's sake than the other regions.

Transport House has never favoured the recruiting of public school boys for the railways but it was brilliantly justified in Mr. Grand's case.—*From "Peterborough" in "The Daily Telegraph."*

### Travel Comfort in 1859

If our reader proposes to travel by the first class and to see the scenery, we recommend him to take his seat with his back to the engine, on the far side of the carriage, near the window. If it be summer time, he may feel no inconvenience from sitting with his face towards the locomotive, especially if he select a carriage as near to the engine as possible. . . .

If part of a journey is to be per-

formed during darkness, we strongly advise the purchase of a railway lamp. The most perfect one in existence is made by Tucker & Son, of the Strand; it completely answers the intended purpose, and, by an ingenious contrivance, the cover of the lamp forms a powerful reflector to throw the light on the book, and a shade to protect the eyes of the old gentleman in the opposite corner, who but for this contrivance, would be blinking like an owl in the sunshine; the three hooks and clip securely hold it on to the back or door of the carriage, and a screw fastens it, when so required, to the arm of the seat. The portability is extraordinary, for, when not in use . . . the lamp becomes the size of a sandwich-box—six inches by three, weighing ten ounces.—*From George Measom's "Official Illustrated Guide to the North-Western Railway" (1859).*

### Melodious Gabble

One of the joys of railway travel is listening to the melodious gabble of station announcers, unless . . . one is anxious for information. The absence of uniformity in their voices amounts to one in the eye for the B.B.C. It is kind and clever of London Transport to promise an entire dozen of new loudspeakers at Underground stations, but may one hope that their users will first of all be taught to enunciate their words clearly.—*From a letter to "The Times."*

### Trains Are Still Wonderful

Nothing in America is more melancholy than the great echoing, empty halls of the large stations—of underground Grand Central and Pennsyl-

vania, 20-year-old Cleveland Terminus, dark Pittsburgh and bright Washington. To find a daytime connection from Cleveland to Washington took more than an hour's research and constant suggestions that we should go, instead, by air or bus. And in that train a group of drinking businessmen crowded over the unfamiliar pleasures of railway travel like happy children on a railway at a fair. Yet the trains are still wonderful, even if their food is not. They are bright, clean, comfortable and fast.—*Philip Toynbee in "The Observer."*

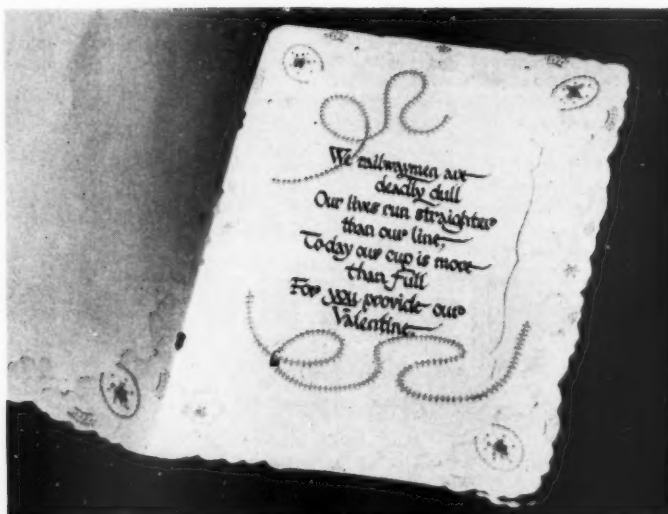
### That Certain Feeling

"Cheer up, neighbours, winter's going, though somewhere it may be snowing," was the message that I heard from my favourite early bird. Rolling stock, which has been hiding Winter-long, in some lone siding, will be roused from hibernation and restored to circulation. Sprays and paint-pots will be busy, Carriage cleaners will get dizzy, Diesels swarm like valentines Up and down the running lines.

Posters at the railway stations Stimulate anticipations, And that plot, so dark and cold, Soon will glow with green and gold. Banish winter woes and borrow Some of springtime's bright tomorrow. In this green and pleasant land Faith and hope go hand in hand At the vernal equinox, So, when meddling with the clocks Let's anticipate with reason One more bumper summer season.

A. B.

## Valentine for the Queen Mother



Valentine card received by Queen Elizabeth the Queen Mother aboard the Royal train in Kenya last Saturday from 71 East African Railways & Harbours staff on the train

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### RHODESIA

#### Victorian Falls Bridge

Work has now been completed by Rhodesia Railways in reducing vibration on the Victoria Falls Bridge. The rails over the bridge have been welded into 120 ft. lengths and are supported by rubber pads on the sleepers. This, and other maintenance work such as stiffening the hand rails, has virtually eliminated the noise made by passing trains. The bridge has also been repainted. The work has taken about 18 months but this was spread over three periods in the past three years, interruptions occurring when there was heavy spray from the Falls, particularly during the record Zambesi floods in the past two years. The bridge is 650 ft. long, weighs 1,868 tons and spans the Zambesi about 400 ft. above water level.

### EAST AFRICA

#### Royal Visit

The Royal train used by Queen Elizabeth the Queen Mother on her recent visit to Kenya consisted of two special coaches for the Queen Mother, one special coach for the Governor of Kenya, seven first class and three second class standard passenger coaches for the Queen Mother's and the Governor's parties, railway officials, and staff, two restaurant cars, a specially equipped parcel van, and a brake van. The train was hauled by two East African Railways "Governor" class Beyer-Garratt locomotives.

The Queen Mother's coaches, constructed some 40 years ago, were those normally reserved for use by the Governors of Kenya and Uganda. They were substantially refurbished and renovated. The night coach was entirely redesigned to give, within the limits of metre-gauge coaches, an im-

pression of spaciousness. It also included accommodation and workroom for a dresser. The day coach consists of an observation platform, a lounge, dining room, all panelled in Burma teak, and a kitchen. The lounge is fitted with dark green carpeting, and the furniture upholstered in blue damask. The dining room, which seats eight people, has a deep wine coloured carpet, and silver-grey upholstered chairs and curtains.

The parcels van was converted into a hair-dressing saloon, an office with a five-line telephone switchboard, an ironing room, and a cold store.

### INDIA

#### Suggestions Scheme

The suggestions scheme now in operation provides for inventions and suggestions by the railway staff to be examined by a committee under the chairmanship of the senior Deputy General Manager of each railway. For suggestions accepted, cash rewards are made, or advance increments in pay, preference accorded for grant of study leave, or a record made in service sheets with a view to promotion. The scheme is reported to have worked satisfactorily. During the 15 months ended June 30, 1958, 1,378 suggestions were submitted. Eighty-three cash awards were made.

### AUSTRALIA

#### Diesel-Hydraulic Locomotives

Two MDH class diesel-hydraulic locomotives recently delivered to the Commonwealth Railways by Clyde Engineering Limited, are now operating in shunting service at Kalgoorlie, the western terminal of the Trans-Australian Railway.

The two locomotives, part of a contract for six 625-h.p. shunters, worked

a 700-ton, freight train across the Nullarbor Plain on the delivery run. In a trial recently conducted at the Port Pirie power house a locomotive of the MDH class moved a load of 40 coal hoppers totalling 2,520 tons on level track around reverse curves for a distance of 450 yd. The tests were conducted to see whether the MDH locomotives could shunt full train loads of Leigh Creek coal without remارشalling.

### QUEENSLAND

#### Perishable Traffic

As part of a plan to supply perishable commodities to distant parts of the State, the Government Railways has instituted a new perishable service between Rockhampton and Blackall.

Two CMIS refrigerator wagons have been converted at a cost of £2,000 for this work. The ice bunkers have been divided into two compartments, one to carry four tons of milk and the other for general perishable traffic with a section for fish.

Mechanical equipment includes generator, batteries, and two fans at the end of each compartment. While the car is in motion, the generator operates the fans and charges the batteries. When the car is stationary, air within the compartment is circulated by the fans which are powered by the generator when the car is in motion and battery-operated when it is stationary.

Departures from Rockhampton are made on Monday and Thursday and the 378-mile journey takes 26 hr.

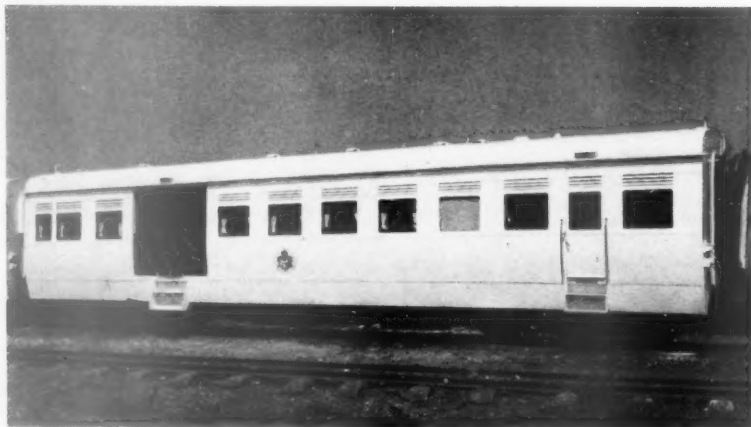
### NEW ZEALAND

#### Cook Strait Ferry

The Railways Department is likely to be the choice of the Government as the organisation to have the major say in the operation of the sea, rail, and motor vehicle and passenger ferry service between Wellington and Picton in the South Island, as recommended by the committee on transport needs between the North and South Islands.

The Government has decided that the service will be primarily a rail ferry service. An indication of this is the selection of the Minister of Railways, Mr. M. Moohan, as the Cabinet Minister responsible for collecting the information and reporting to the Cabinet so a decision can be reached on the type of vessel needed, so that an order can be placed with a shipyard.

There is need for haste. The present passenger and cargo service operated by the Union Steam Ship Company vessel *Tamahine* could well come to an end in 1962, when the ship is due for a major survey that could indicate the end of its economic life. That leaves only three years for the Government to obtain the replacement ferry that



The Queen Mother's day coach in the Royal train (see illustrations of accommodation on page 220)

would carry railway wagons, motor vehicles, including lorries, and passengers.

So far the Government has not the information to make a preliminary decision on the actual size of the vessel, nor that of the traffic potentiality.

A drive-on drive-off vehicle ferry, equipped also to take railway wagons on such a service as that across turbulent Cook Strait is expected to cost some £2,000,000.

## CANADA

### C.N.R. Wage Increases

Wage increases totalling nearly 10 per cent are included in the terms of a three-year agreement reached between Canadian National Railways and 21,000 employees represented by the Brotherhood of Railroad Trainmen. The agreement calls for wage increases in four stages and changes in rules. The staff concerned includes guards, brakemen, and various grades employed in marshalling yards.

### Mount Royal Tunnel Reconstruction

The Canadian National Railways is reconstructing the south end of Mount Royal Tunnel, Montreal, to install double crossover switches and flatten out the curves in the tracks leading to the platforms in Central Station. This work must be carried out before the redevelopment of Place Ville Marie, described in our issue of February 21, 1958, can commence.

There are some 28,000 cu. ft. of quicksand in the area, and tunnelling has been carried out by first freezing the sand. This has been done by pumping chilled brine down into the sand from street level through 160

double-wall pipes, 15 ft. long and spaced 2 to 4 ft. apart.

The freezing apparatus, comprising two electrically-driven compressors and a heat exchanger, cools the brine to about 15°F.

## BRAZIL

### New Capital Issue

The National Railway capital was increased last December from 60,450 million cruzeiros to 61,283,594,000 by a new issue of ordinary and preferential shares of the nominal value of 1,000 crs. each. The Federal Union took up the 176,041 ordinary shares, the balance in preferential stock being subscribed by the States and Municipalities.

### Imports of Rails

A presidential decree exempts imported steel rails and accessories from payment of import duties and consumption tax, including the 5 per cent customs charge, when the import is financed by Eximbank or the Brazilian Bank for Economic Development.

### Railway Works in 1959 Budget

The Federal Budget for 1959 allots 4,324,500,000 cruzeiros, about £10,886,250 at the present free rate, for works on state-owned lines under the jurisdiction of the National Railway Department (D.N.E.F.), i.e. not yet incorporated in the Rede Ferroviaria Federal.

The work programme provides for construction of the Mafra-Barra do Jacare section, with a branch from Rio das Antas to Bento Gonçalves; in Rio Grande do Sul; construction of the Itagua to Engenheiro Blei section of the Southern Trunk

Line; new lines from Mussum to Passo Fundo and Irai in Rio, and from Pires do Rio to Brasilia, the new Federal capital; and extension of the Central of Brazil Railway from Pirapora to Brasilia.

In December, 1958, the D.N.E.F. completed and made over to R.F.F. the section from Conceicao de Almeida to Cruz das Almas, in Bahia. The next stage, the connection of Cruz das Almas to Santo Antonio, will complete the link up of the Eastern Railway with the Nazare Railway.

## UNITED STATES

### The McKinley Bridge, St. Louis

Previously the property of the Illinois Terminal Railroad, the McKinley Bridge across the Mississippi River, connecting St. Louis with Venice, Illinois, on the east side of the river, has been sold to the city of Venice for \$22,970,000. The I.T.R.R. is owned by 11 Class 1 railways serving St. Louis, and these from now on will pay £250,000 a year jointly for the use of the bridge.

## ITALY

### Train Ferries

The State Railways are to improve the train ferry services across the Straits of Messina, on the existing routes between Villa San Giovanni and Messina and between Reggio Calabria and Messina. A seventh ferryboat of 5,000 tons gross, is being built by Ansaldo.

A long-discussed train ferry is to operate between Civitavecchia, north of Rome, and Olbia, in the north of Sardinia. Two 500-ton ferryboats are to be placed in service in 1960.

## Publications Received

*The Engineer Buyers Guide, 1959.* London: *The Engineer*, 28, Essex Street, Strand, W.C.2. 8½ in. x 5½ in. 960 pp. Price 7s. 6d.—Besides a classified buyer's guide to a variety of engineering products and services offered by some 1,800 firms, this edition includes a list of forthcoming engineering exhibitions. A key list of trade names and symbols indicates the products and manufacturers.

*Historical Steam Locomotives.* By O. S. Nock. London: A. & C. Black, Limited, 4/6, Soho Square, W.1. 9½ in. x 7 in. 162 pp. Illustrated. Price 21s.—Much information for laymen is presented clearly and pleasantly on classic British locomotives ranging from Stephenson's *Locomotion* to Churchward's "Stars" on the G.W.R. The choice of subjects includes the Aspinall 2-4-2 tanks of the L.Y.R., the Caledonian "single" No. 123, G.N.R. Ivatt Atlantics and the Deeley 4-4-0s of the Midland. A chapter is devoted to William Stroudley of the L.B.S.C.R.

Some of the half-time illustrations have rarely been reproduced before.

*British Diesel Mines Locomotives.* London: Published by the Underground Mines Locomotive Group of the Locomotive & Allied Manufacturers' Association of Great Britain. 4½ in. x 7 in. 72 pp. Illustrated. Price 8s. 6d. Obtainable from Ian Allan Limited, Hampton Court, Surrey.—Products resulting from 20 years' development in mines locomotives are explained with details of exhaust conditioning and flameproofing. A chapter gives information and formulae to aid selection of locomotive sizes for gradients, curves, and loads. A schedule lists British underground mines locomotives from 18 to 200 h.p. The members of the Group are Hudswell, Clarke & Co. Ltd., the Hunslet Engine Co. Ltd., North British Locomotive Co. Ltd., and Ruston & Hornsby Limited.

*Europäische Eisenbahnzüge (European Express Trains).* By Dr. Fritz Stöckl. Darmstadt: Carl Röhrig Ver-

lag, Hohzofallee 33a. 9½ in. x 8½ in. x 1½ in. 268 pp. Illustrated. D.M.28.—This series of descriptions of most of the named trains in Europe, including Great Britain, west of the Iron Curtain, gives schedules and compositions in force during the 1958 summer timetable, with particulars, including plans, of the rolling stock. Although a good deal of the information is necessarily out of date, traffic officers may find some useful information on the way in which British and Continental railways move their long-distance passenger traffic. The style is at times as racy as that of Foxwell and Farrer's classic of 1889, "Express Trains English and Foreign." Some of the half-tone illustrations are well reproduced.

*Holidays on the Continent.*—Each of a series of well-illustrated programmes of Thos. Cook & Son Limited and Dean & Dawson Limited offers, as in previous years, a wide variety of holidays in a country or group of countries in Europe: Belgium, Holland, and Luxembourg; France; Germany; Italy; Scandinavia; Spain and Portugal; and Switzerland.



## Mechanical Washing Plant for Electric Stock in Bombay

*Economies through use of inexpensive apparatus*

*By S. P. Tonse, B.E., A.M.I.E.E.,*

*Deputy Chief Electrical Engineer, Western Railway of India*



*Separate structures on either side are built to coach roof height only, avoiding the expense of transverse members over contact line*

**A** COACH washing plant, designed and constructed by the mechanical engineers and staff of the Western Railway, and the first of its kind in India, was brought into use recently at the Bombay Central car shed of the Western Railway. The plant is designed for washing the external panels of the 1,500-V. electric multiple-unit suburban stock.

The electrified suburban lines of the Western Railway serve a densely populated area extending from Churchgate terminus, through the Central Station, to Borivli and onwards to Virar. There has been a phenomenal growth of traffic in this section and now 500,000 passengers are carried daily.

There are at present 31 eight-coach sets of which 27 are in service. Each set runs, on an average, 280 miles a day. As a result, the coaches require regular cleaning and washing.

### Manual Washing

Besides dusting and internal cleaning of the coaches at terminal stations each day, the multiple-unit sets were being washed in the car shed both internally and externally by manual labour at the rate of two sets per working day. With 27 rakes in service, this gave an interval of about a fortnight between successive washings for each set, which was too long in the dusty and salt atmosphere of Bombay. To maintain the external appearance of coaches, it was found necessary to reduce the interval between

external washings from 14 to seven days.

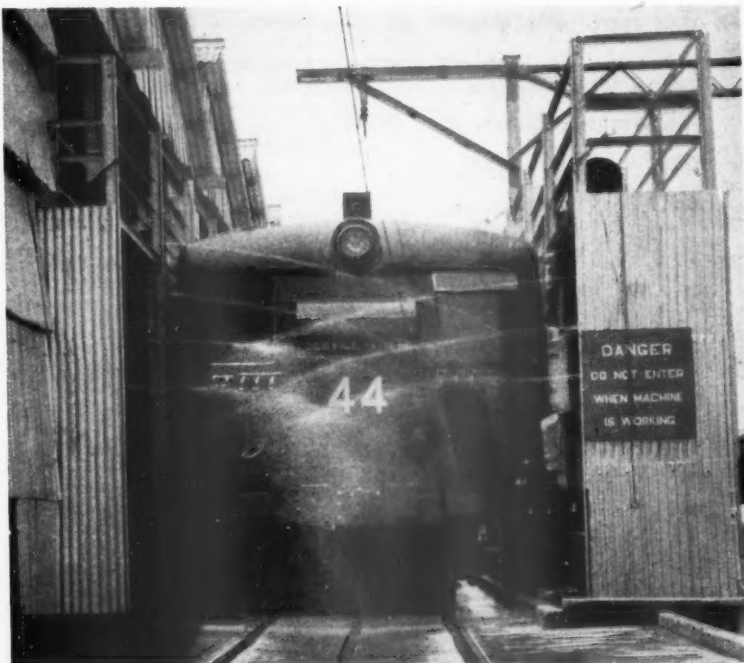
The availability of electrical multiple-unit rakes in the car shed is limited. With

the existing density of traffic (357 trains a day) all the 27 multiple-unit sets must be in service during the morning and evening peak periods. They become available for inspection, repairs, washing and stabling in the car shed only for a short interval during daylight hours between the peak periods.

The washing of rakes could be intensified by: (a) increasing the staff to wash coaches by manual labour; or (b) introducing the mechanical washing process to increase output. The former was not feasible for want of additional sidings in the car shed at Bombay Central as the site was hedged-in by running tracks. Additional staff would have to be idle when sets were not available for washing. It was, therefore, felt necessary to install a mechanical washing plant in the car shed.

### Low Cost of Indian Built Plant

An imported coach washing plant, it is stated, would have cost Rs. 108,000 (about £8,000). To save foreign exchange, mechanical engineers of the Western Railway experimented with working models for some months to develop a satisfactory design of the coach washing plant. The installation was sanctioned early in 1957 at an estimated cost of Rs. 24,000. By using indigenous materials, this plant was constructed entirely by railway staff.



*Multiple-unit train of 12-ft. wide stock passing through plant under its own power*



The plant comprises essentially of eight scrubbing units, four on each side of the track, and a system of water jets located between the scrubbing units. Each scrubbing unit is made up of a vertical shaft which is driven by a 3-h.p. motor-gear unit at a speed of 125 r.p.m. On each unit three sets of four-bladed carriers are mounted, to the ends of which strips of canvas cloth are attached.

The multiple-unit sets proceed through the plant under their own power. The contact line is well clear of the cleaning apparatus.

As the shaft rotates, the canvas cloth rubs against the body of the coach. The rubbing width of the cloth is 3-4 in. Due to centrifugal force imparted to the canvas cloth, pressure is brought to bear upon the sides of coaches.

The three sets of canvas cloth carriers on each shaft are arranged at an angle of 30 deg. from each other, so that the

minimum clearance of the coach body from the wiping units is 3 in.

In the 1928 stock, where the sides are vertical, a uniform clearance from the scrubbing units is obtained and the wiping surface of the cloth is 3 in. wide, from the top to the bottom of the coach sides. With the 1952 and 1957 vehicles, which have slightly curved sides, the wiping surface of the cloth varies slightly from 4 in. at the widest, to about 2 in. at the narrowest part near the roof. The fixing arrangement and the protruding length of the cloth adopted enable coaches with different contours to be washed satisfactorily.

#### Conservation of Water

The sprayed water after washing is passed through screens and collected in an underground sump, from which a 5-h.p. electric pump returns it to the jets at a pressure of about 35 lb. per sq. in. As soon as the water in the sump is

by the second scrubbing unit. After passing through these two units, another set of jets again spray re-circulated water on to the sides of the body, which is scrubbed again by the third set of rotating scrubbing units. Next, another set of jets spray re-circulated water and the sides are scrubbed again by the fourth set of rotating scrubbing units.

After passing this last set of scrubbing units, a set of jets spray fresh water on to the sides of the coach, which remove all traces of dirt as well as solution likely to remain. As the coaches pass out of the washing plant, men stationed on either side inspect them and remove any isolated spots of grease and so on by scrubbing with hand brushes.

The time required for passing an eight-coach set through the plant is about 10-15 min. Allowing for shunting time, successive sets can be passed through the washing plant at intervals of 40 min.

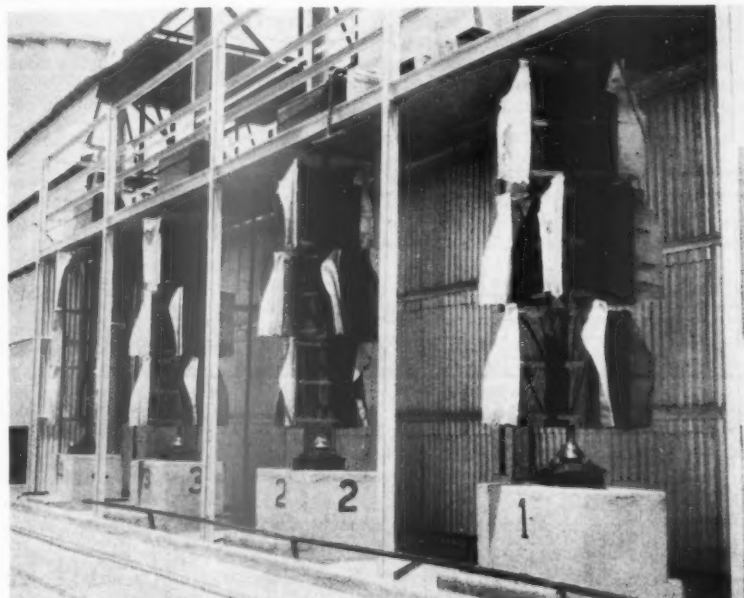
The detergent solution used in the plant has also been carefully selected after a number of trials. A powder called "Syd," locally produced, is mixed with water in the overhead tanks in the proportion of one oz. to a gal. There are two 300-gal. overhead storage tanks, one on each side of the track, in which the detergent solution is prepared for spraying on to the coach body through a set of nozzles on either side. The powder consumption to wash a rake of eight coaches is about 1½ lb.

As the exterior of the coach has to be subjected to scrubbing by the canvas attached to the rotating units, the clearance between the coaches and the moving blades has necessarily to be limited: 3-4 in. An emergency push button switch has been provided which when operated cuts off electric power to all the motors of the plant and shuts it down completely in case of emergencies. At the same time, this causes a change in the aspect of a signal at the far end from yellow to red to warn the motor-man to stop the train.

#### Economies Effected

Before the washing plant was commissioned, one foreman and 16 labourers were employed for external washing of two sets a day; one foreman and 32 labourers would have been necessary for the external washing of four sets a day. With the help of the washing plant the same staff can turn out four sets a day. As most of the scrubbing is done mechanically, the staff are used to ensure that doors and windows are closed before the coach is allowed into the washing plant, to scrub any left over dirt spots after the set emerges, to clean the ends of the coaches and the area over the cantrail which cannot be reached by the scrubbing cloth, and also for final touching up of windows and shutters.

The use of the mechanical coach washing plant will result in a saving of about Rs. 1,250 a month or Rs. 15,000 per year. Thus the low capital cost of Rs. 24,000 for the installation of the plant will be wiped off by the savings effected in less than two years.



Scrubbing units, showing cloth carriers for wiping sides of 12-ft. wide stock with differing contours

motor is uniformly loaded. The canvas cloth is folded and fitted in the fixtures which are attached to the edge of the carrier blades by wing-nuts. As the cloth gets frayed, the fixtures can be easily dismantled and the cloth extended, with frayed edges trimmed at intervals of about a month.

#### Different Types of Stock

The washing plant has to deal with three different types of 12-ft.-wide electrical multiple-unit stock, viz., Cammell Laird (1928), Metropolitan Cammell (1952), and Japanese (1957). These three types have slightly different external contours. To obtain good scrubbing action on all these types, the length of the canvas cloth protruding from the outer edges of the carrier blades of the scrubbing units is kept at 6-7 in. The

found dirty and unfit for further use, it is drained off and the sump replenished with fresh water. In the final washing, fresh water is sprayed before the set of coaches passes out of the plant. A separate 1-h.p. electrically operated pump delivers the clean water through a set of nozzles at a pressure of about 30 lb. per sq. in.

#### Operation

The jets consist of re-circulated water, detergent solution and fresh-water jets suitably arranged. As the coach enters the washing plant at about 1.5 m.p.h., a set of jets first spray re-circulated water on to its sides. Then the first set of scrubbing units scrub the wetted surface. As the vehicle moves forward four sprays sprinkle the detergent solution on its sides, which are then scrubbed

# Diesel-Electric Mixed-Traffic Locomotive for Overseas Service

*Prototype 1,100-h.p. Co-Co design to meet a wide range of specification requirements*

INTENDED primarily to meet the light axle loading requirements of many railways overseas, a prototype diesel-electric mixed-traffic Co-Co locomotive, named "Explorer," has been produced as a joint venture by the British Thomson-Houston Co. Ltd. and Lister-Blackstone Rail Traction Limited. It will be shipped shortly to Kenya for service testing on East African Railways & Harbours, including some steeply graded lines.

The power equipment is a turbo-charged 12-cylinder Blackstone Type ERS 12T, diesel engine, driving, through a speed increasing gear, a B.T.H. 675-kW. generator. At the B.S. rating of 1,100 b.h.p. at 800 r.p.m. an ample power reserve is available to meet the operating altitude and tropical temperature conditions. Separate motors are fitted to each axle of the two six-wheel bogies.

Leading particulars of the prototype recently completed are as follow:—

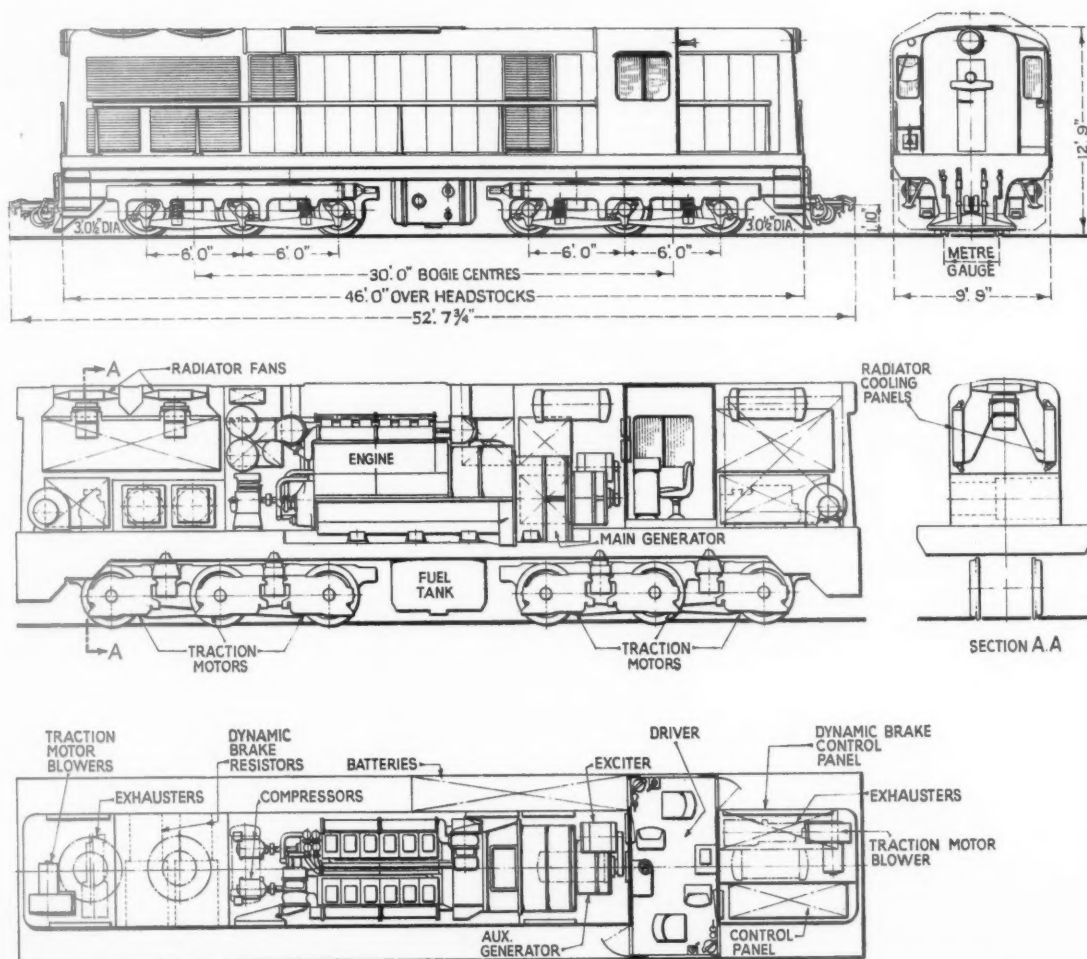
Gauge	..	..	Metre
Wheel arrangement	..	..	Co-Co
Maximum speed	..	..	55 m.p.h.
Weight	..	..	72 tons
Tractive effort—maximum	..	..	42,000 lb.
Tractive effort—continuous	..	..	24,000 lb.
Fuel tank capacity	..	..	500 gal.
Length over headstocks	..	..	ft. in.
Height overall	..	..	12 9
Width overall	..	..	9 9
Bogie wheelbase	..	..	12 0
Bogie pivot centres	..	..	30 0
Wheel dia.	..	..	3 0½
Minimum radius of curve	..	..	300 0

The design allows of simple modification to meet alternative specification requirements. The gauges for which the basic design is intended range from metre to 5 ft. 6 in. with a standard frame. Provision is made for multiple-unit working, right-hand or left-hand driving positions, reductions in overall width or height, alternative braking

equipment, and different axle loadings. The maximum speed is 55 m.p.h. and continuous tractive effort 24,000 lb. The "Explorer" is intended for mixed traffic working on main and branch lines. The bonneted type of construction was chosen to facilitate servicing in tropical conditions.

## Main and Auxiliary Equipment

The main bonnet, forward of the cab, is divided into three compartments. In the leading compartment are the cooling group, one traction motor blower, one motor-driven exhauster, and two forced-draught cooled dynamic brake resistor units. In the central compartment are the engine, two shaft-driven air compressors, two air receivers, and the engine coolant header tank. The engine inlet air filters are in the bonnet sides and the twin exhausts discharge through the roof. In the generator com-



*Elevations, sections and plan of "Explorer" 1,100-h.p. metre-gauge diesel-electric locomotive*



*General view of metre-gauge locomotive, showing primary springing of bogies*

partment, adjacent to the cab, is an air receiver.

At the rear of the cab is a short bonneted compartment which houses the main electrical control panel, dynamic brake control panel, one traction motor blower, one exhaustor, and one air receiver. This compartment and the engine compartment are slightly pressurised with filtered air to prevent the entry of dust.

The bonnet casings are carried on a welded structure of steel angles. A considerable area of each side is occupied by removable louvred panels covering the panel type air intake filters. Access to the main equipment for servicing is by hinged doors. Inspection hatch covers are fitted over the engine, and also give access to auxiliary equipment. At each corner of the frame are steps, with a continuous handrail between the steps and the cab.

#### **Cab**

The cab is over the centre of the rear bogie. It contains duplicate driving controls and instruments for travel in either direction. The driving seats are upholstered and adjustable. At the left of the seat is the power handle of the master controller, with the reverser handle immediately below. These two controls are interlocked to prevent movement of the reverser when the power is switched on. The straight air brake control is on the right. In front of the seat are the dynamic brake, vacuum brake, and automatic air brake controls.

Above the controls is a panel carrying the ammeter, speedometer, and the air brake and vacuum gauges. The engine instrument panel is fitted in the centre of the front bulkhead above the handbrake. Laycock pneumatic wipers are fitted to the driving screens.

The cab also includes a warming plate, lockers for food and clothing, and a ventilating fan. The cab roof and sides are insulated with glass wool. There are access doors from the front and rear platforms behind each seat, and

Beclawat sliding windows at each side of the cab.

#### **Power Unit**

The Lister-Blackstone 12-cylinder engine is rated at 1,100 b.h.p. at 800 r.p.m. It is a double-bank version of the makers' six-cylinder unit. The two vertical banks are bolted back-to-back on a common base, with an output gear on each crankshaft meshing with a main drive gear.

This construction facilitates acceleration from 800 r.p.m. to 1,125 r.p.m., which allows a lighter generator to be used. The bore is 8.75 in. and stroke 11.5 in. Each bank has a Napier turbo-charger.

Each set of six cylinders is a self-contained unit, with fuel injection equipment, governor, oil and water cir-

culating pumps, and valve gear camshaft. This makes possible a considerable degree of standardisation in manufacture. In an emergency, the drive from one crankshaft can be disconnected and the locomotive run on reduced power.

The cylinder block is a welded steel fabrication fitted with cast-iron wet liners. In servicing the aluminium alloy pistons may be withdrawn upwards through the bore or downwards through the crankcase side covers.

To ensure even loading and a smooth drive from the two crankshafts to a common output gear, the drive from each shaft is taken through a Blackstone flexible coupling and nodal damper. The latter is a grease-filled multi-plate clutch arranged to impose a viscous drag on the oscillation of the flexible coupling. Rubber, bonded to the input and output members, ensures a high degree of twist under load. This prevents any torque reversal from being transmitted to the gear teeth. At the front end of each crankshaft is a hydraulic type torsional vibration damper.

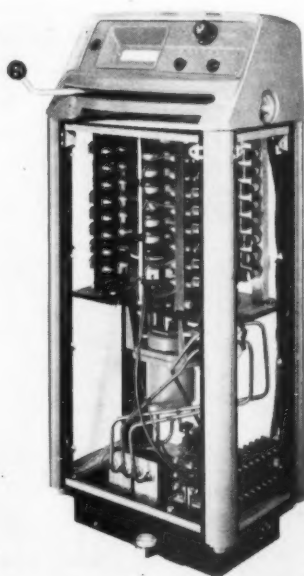
Protection equipment stops the engine if the oil pressure drops in the engine or gearbox and if overspeeding occurs.

The combined engine-generator set is flexibly mounted on eight rubber mountings.

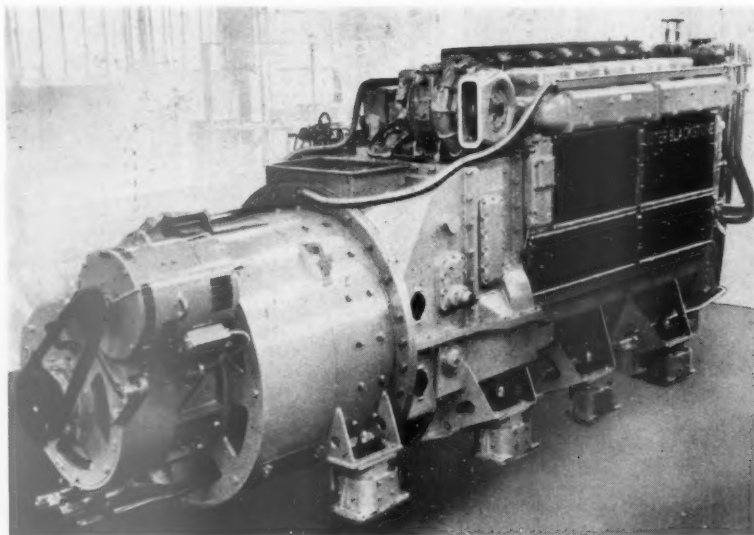
#### **Cooling**

The cooling group at the forward end of the bonnet is a twin fan unit, drawing air through radiator side panels and discharging through the roof. Each panel is built in sections, which are mounted on Silentbloc rubber bushes.

Two-speed electric motors with thermostatic regulation drive the axial flow fan. Coolant circulation, under thermostatic control, is by two engine-driven centrifugal pumps. Separate sections are provided in the radiator for the cooling of the engine lubricating oil and the output gear oil. The total coolant capacity, including the header tank, is 50 gal.



*Power controller with covers removed*



*Lister-Blackstone engine and B.T.H. main generator, overhung auxiliary generator, and vee-belt-driven exciter*

In the construction of the Alstom bogie rubber cone pivots are used for body suspension. The bogie frame members are welded steel fabrications of box form, with fixed bolsters. There are four spring-loaded side bearers and two rubber cone pivots. The pivots are supported on the fixed bolsters on rubber pads, which allow side movement in shear.

To permit maximum articulation the inner pivot assembly of each bogie is

free to slide as a unit. The periodicity and lateral damping of the suspension can be varied by adjustment of the side bearer springs. Primary springing is by underhung equalising beams and coil springs.

The guideless Skefko roller bearing axleboxes are carried on rubber bushed radius rods, so eliminating horn guide wear.

The main underframe is a welded structure of rolled sections and plate,

with diagonal bracing in the end panels to transfer the loading of the central buffers. Extensive lightening holes are cut in the vertical webs of the main longitudines and cross-members.

### Braking

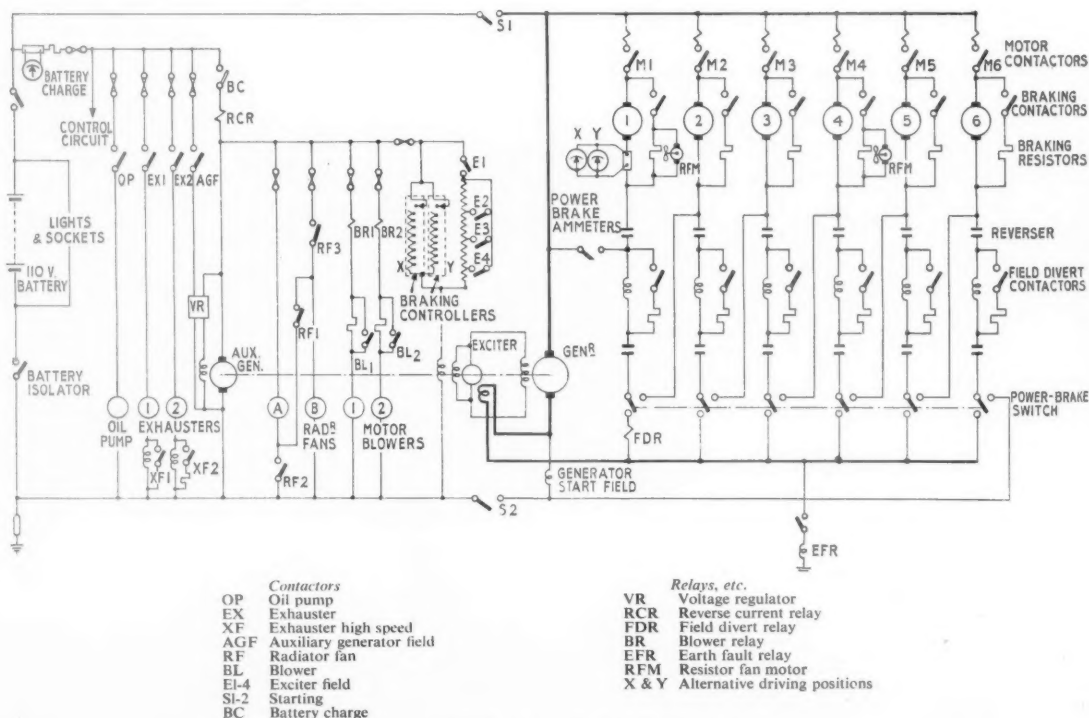
Equipment is provided for the brake operation of both vacuum and air-braked stock. In addition, an electrodynamic brake is fitted on the locomotive. The mechanical braking is Westinghouse equipment. Two brake cylinders fitted on each bogie operate single shoes on each wheel. When hauling unbraked stock braking is controlled by a self-lapping straight air brake valve. With vacuum-braked stock the locomotive air brakes are controlled through the vacuum brake valve. The hand brake operates on four wheels of one bogie.

### Dynamic Brake

The dynamic brake is a non-friction brake applied to the axles instead of the wheels. When it is applied, by a normal type of control in the cab, the six traction motors are switched to act as generators driven by the wheels. The control is not interlocked with the mechanical brakes, and both systems may be used together if required. Further details of this equipment are given below.

### Electrical Equipment

The B.T.H. Type RTB 14440 main generator is single-bearing and self-ventilated, flange mounted to the engine.



*Circuit diagram of "Explorer" diesel-electric locomotive*



The continuous ratings at 1,125 r.p.m. are 675 kW. 1,310 A. 515 V. and 670 kW. 2,310 A. 290 V. The generator is 10-pole with class "B" insulation. It incorporates a starting winding for motoring the engine.

At the frame end the field windings are retained by leaf springs. The armature spider, on which the laminated core is assembled, is bolted direct to the engine drive, and at the rear end is supported by a self-aligning roller bearing.

Through cooling ducts in the spider a steel fan draws filtered cooling air over the commutator and brush gear. This air is discharged through a division bulkhead into the engine compartment. A feature of B.T.H. machines is the use of B.T.H.-Pollack type commutators, in which each segment is retained by a locking key giving a continuous support over the full length.

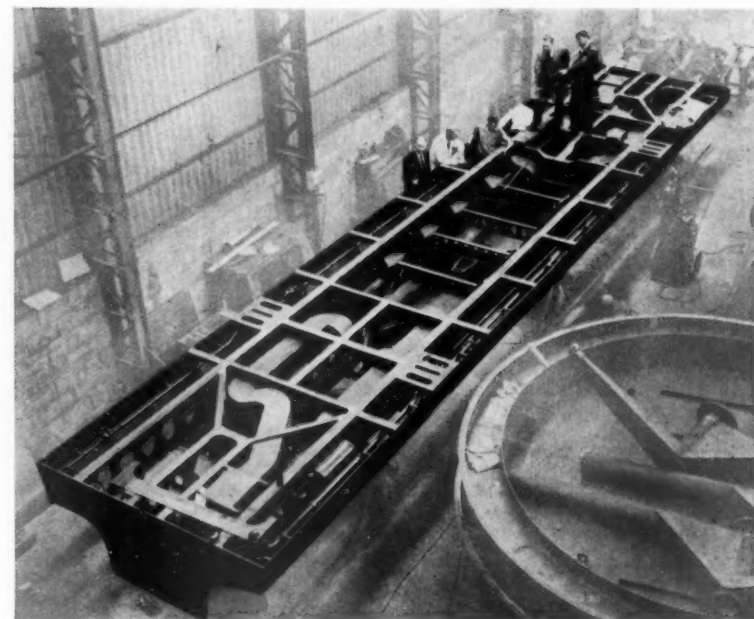
#### Auxiliary Generator

The auxiliary generator is a B.T.H. machine type RTB 7428 with a continuous rating of 48 kW., 110 V., 700-1,125 r.p.m. Voltage control is by a Brown Boveri automatic voltage regulator. This generator is flange-mounted to the main generator. A belt-driven exciter is saddle mounted on the auxiliary generator.

The traction motors have a continuous rating of 385 A. 290 V. at 440 r.p.m. These are of the B.T.H. Type 138, force-ventilated, and axle-hung on plain bearings. The reduction gear is cushioned by a torsionally resilient gear in the drive. Class B insulation is used and the motor bearing arrangement is designed to facilitate armature removal.

#### Control of Braking

When the electro-dynamic brake is used the motors are switched to act as generators driven by the wheels. The



*Underframe used in designs for all gauges*

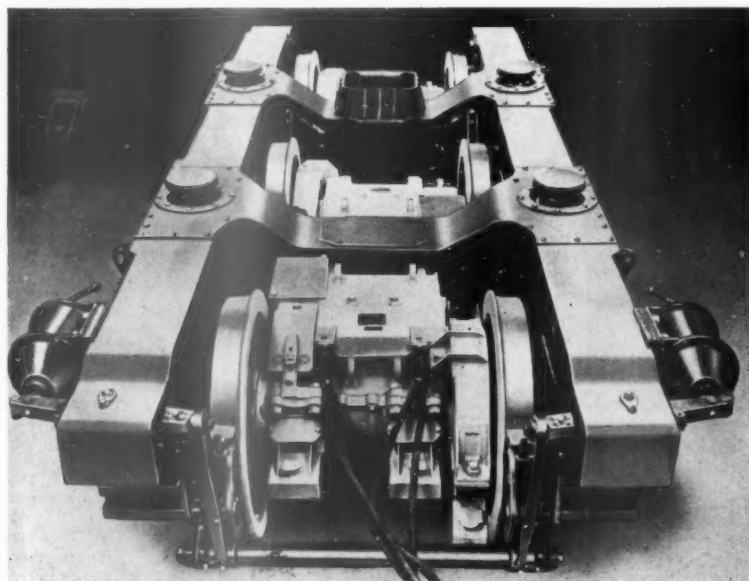
current produced is dissipated through banks of resistances. Control of the braking is by varying the field current in the motor, which is performed by pilot contacts and a rheostat on the brake control in the cab. Switching is effected by contactors on the control panel in the compartment behind the cab. The resistors are force cooled by a motor-driven fan.

In the control cubicle electromagnetic contactors are used for the auxiliary and control circuits and electro-pneumatic contactors for the motor circuits. One step of field

weakening is automatically introduced, dependent upon the speed and load.

#### Contractors include:—

Joint main contractors	
Electrical equipment ..	British Thomson-Houston Co. Ltd.
Diesel engine ..	Lister Blackstone Rail Traction Limited
Principal Sub-contractor	
Mechanical parts including bogies	Clayton Equipment Co. Ltd.
Other sub-contractors	
Axle boxes ..	Skefco Ball Bearing Co. Ltd.
Battery ..	Chloride Batteries Limited
Bogie pivots and axlebox links	S.G. de Constructions Electriques & Mécaniques Alstom
Brakes, compressors and exhausters	Westinghouse Brake & Signal Co. Ltd.
Cable ..	Siemens Edison Swan Limited
Conduit ..	Simplex Electric Limited
Engine cooling equipment	J. W. Lawrence Limited
Filters ..	Air-Maze Limited
Oil and fuel pumps ..	Varley-F.M.C. Limited
Fuel injection equipment	C.A.V. Limited
Traction motor blowers	Aerex Limited
Voltage regulator ..	Brown, Boveri & Co. Ltd.
Wheels and axles ..	Taylor Bros. & Co. Ltd.



*Bogie with traction motors, showing pivots and slide bearings*

**BRITISH STANDARD FOR ARCHITECTS', ENGINEERS' AND SURVEYORS' SCALES.**—The new British Standard publication for architects', engineers', and surveyors' scales, B.S. 1347, Part 2: 1959 specifies requirements for white opaque plastics scales. It has 24 pp. with two large fold-out illustration pages. Data on scale reference numbers, designation, sub-divisions, figuring, and so on, are provided in tables which deal separately with 14 types of scale any of which may be either oval or flat section. These tables will simplify the buyer's work when ordering. Copies of this Standard, price 6s., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

## Queen Mother's Accommodation on E.A.R. & H. Royal Train



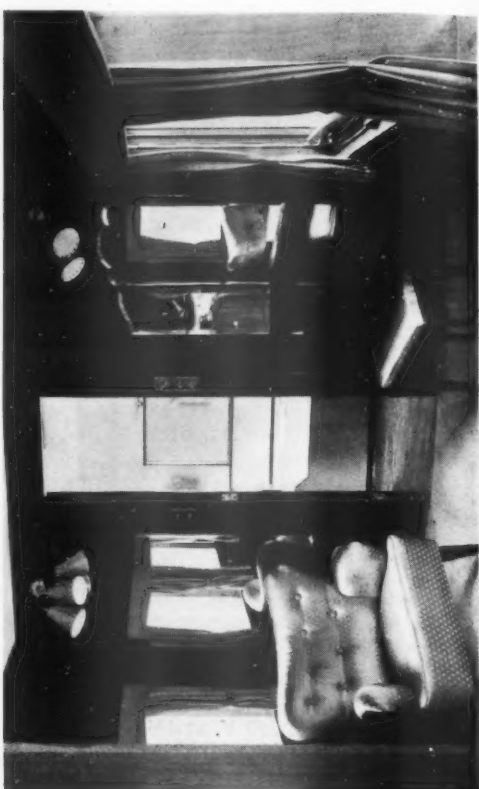
*Part of the lounge looking through to the observation platform*



*Dining saloon in the day coach arranged for eight people*



*The Queen Mother's bedroom*



*Dressing room with bathroom beyond*

## RAILWAY NEWS SECTION

## PERSONAL

The Minister of Transport & Civil Aviation has appointed Mr. K. W. C. Grand, at present General Manager, Western Region, British Railways, to be a full-time Member of the British Transport Commission, in succession to the late Mr. J. W. Watkins. Major-General G. N. Russell, Chairman of the Board of Management, British Road Services, be-

advertising. A year later he also took over the charge of the Publicity Department with the title of Commercial Advertising & Publicity Agent. In 1933, with the late Squadron-Leader S. B. Collett (Assistant Secretary, G.W.R.), he organised the first railway air service (inaugurated by the G.W.R.) between Cardiff and Plymouth, and subsequently extended to Birmingham. He subsequently was a Director of Railway Air Services, and Chairman of Jersey

Manager in 1953. Mr. Grand was appointed General Manager in December, 1955. He is Chairman of the Fishguard & Rosslare Railways & Harbours Company and a Director of City of Oxford Motor Services Limited, Devon General Omnibus & Touring Co. Ltd., Western Welsh Omnibus Co. Ltd., Penarth Pontoon Slipway & Shiprepairing Co. Ltd., Penarth Pontoon & Hodges (Barry) Limited, Fownes Forge & Engineering Co. (1928)



*Mr. K. W. C. Grand*

Appointed a full-time Member of the British Transport Commission



*Major-General G. N. Russell*

Appointed a full-time Member of the British Transport Commission

comes a full-time Member of the Commission in place of Lord Rusholme, who retires on September 30.

Mr. K. W. C. Grand, M.Inst.T., General Manager, Western Region, British Railways, who has been appointed a full-time Member of the British Transport Commission, is 58. He was educated at Rugby, and entered G.W.R. service in 1919 at Park Royal Goods Station. After experience there, at Ealing Broadway, and in the Divisional Superintendent's office, Paddington, he was transferred, in 1922, to the General Manager's office. In 1926 he was appointed the company's General Agent for the U.S.A. & Canada with offices in New York, and, on his return to England in 1929, he became Assistant Publicity Agent. On the expiration of the company's trade advertising agreement with its contractors, Mr. Grand was appointed Commercial Advertising Agent, in 1931, to organise the control of the department newly created to deal with that branch of

Airways, Guernsey Airways and Channel Islands Airways. He was appointed Commercial Assistant to the Superintendent of the Line in 1933, and a year later he became General Assistant. In 1936 Mr. Grand was appointed Divisional Superintendent, Swansea, returning to Paddington in 1937 as an Assistant to the General Manager. In 1939 he was made Principal Assistant to the General Manager, and, in October, 1941, Assistant General Manager. In the same year he was appointed Liaison Officer to the Director-General of the Home Guard, and he was subsequently responsible for the enrolment and training of the numerous units formed throughout the Great Western system. He also organised the company's Air Raid Precautions arrangements and Fire Fighting Services during the war. The very large number of wartime works on the Great Western was his direct responsibility under the late Sir James Milne. He became Chief Regional Officer, Western Region, in 1948, and was renamed Chief Regional

Limited. He is President of the Western Region Ambulance Centre and is a Commander (Brother) of the Order of St. John of Jerusalem. He is a past Chairman of the Transportation Club. Mr. Grand is a member of the B.T.C. Police Committee. He was Chairman of the Railway Clearing House from 1953 to 1955, the year that organisation was transferred to the British Transport Commission. When that transfer was effected, Mr. Grand was elected a Committee Member for the Railway Clearing House, and became its chairman in July, 1955. He was awarded the American Medal of Freedom with Bronze Palm for his services to the United States during the 1939-45 war.

Major-General G. N. Russell, C.B., C.B.E., Chairman of the Board of Management, British Road Services, who has been appointed a full-time Member of the B.T.C., is 59. General Russell was educated at Rugby and at the Royal Military Academy, Woolwich, and was

commissioned in the Royal Engineers in 1918. Between the two wars, he served in India, Iraq, and Canada. He specialised in transportation, and was attached to the Great Western and the London & North Eastern Railways for periods of twelve months. He also commanded the 8th Railway Company R.E. for three years. During the 1939-45 war, he was Director of Movements in the Middle East and later responsible for all military transport in India. After the reoccupation of Singapore, he became Transportation Adviser to the Special Commissioner in South-East Asia.

1955-58. He has served on the Membership Committee from 1953 and has given papers to many sections of the Institute. He delivered the Henry Spurrier Memorial Lecture in December, 1957.

The Rt. Hon. Lord Rusholme, who is retiring as a full-time Member of the British Transport Commission, on September 30, was born in Moss Side, Manchester, on November 29, 1890. He was educated at St. Mary's School, Ashton-on-Mersey, and, at the age of 18, joined the staff of the Co-operative Union, three

Austria, Italy, the four zones of Germany, Yugoslavia, and Poland. Several of these missions were undertaken at the suggestion of the Foreign Secretary. During the 1939-45 war, he was a member of the Central Price Regulation Committee of the Board of Trade Committee on Retail Trade, and of the Ministry of Labour Committee for Business Training. He was chosen as Co-operative Congress President for the 1944 Rochdale Centenary year, and was created a baron, in 1945. He was appointed a member of the Committee of Proceedings in the



[Photo]

[Van Dyke]

*The Rt. Hon. Lord Rusholme*

Full-time Member of the  
B.T.C., 1947-59

*Mr. R. J. Hitchcock*

Re-designated Chief Labour Relations Officer,  
London Transport Executive

In 1948, he was appointed Chairman, Road Transport Executive. By the end of 1951, nearly 4,000 separate undertakings with 40,000 vehicles were amalgamated to form a national road haulage undertaking, British Road Services. A change of Government brought about a change in policy, and in 1953, General Russell became responsible to the Commission for the return to private enterprise of the greater part of the B.R.S. fleet. The passing of the Transport (Disposal of Road Haulage Property) Act, 1956, brought disposals to an end, and General Russell was responsible for consolidating the remaining 16,000 vehicles and of operating them through the medium of five limited companies, all trading under the name British Road Services. General Russell was made a C.B.E. in 1943 for his services in the Middle East, and C.B. in 1946 for his services in India. He is President, this year, of the Institute of Transport. He became a Member of the Council of the Institute in 1953, and was a Vice-President,

years later being elected to the board of the Manchester & Salford Society. He served with the Manchester Regiment in Belgium, France, and Egypt throughout the 1914-18 war, being commissioned in 1918. On returning to the Co-operative Union he was appointed Cashier & Financial Adviser, subsequently being made General Secretary, in which position he took part in reviewing the constitution of the Union as the central organisation of 1,100 Co-operative Societies in the British Isles. In 1930 he was elected to the Executive of the International Co-operative Alliance, becoming prominent in sustaining its prestige through the difficult years of hostilities, during which period he acted as President, to which position he was appointed at the first meeting of the Alliance held after the war. In 1944 he led a British delegation to the U.S.S.R. to make a study of co-operative conditions there, the first contact for many years. He also furthered the Co-operative movement in many European countries, including

Matrimonial Causes. On nationalisation in 1947, he was made a Member of the B.T.C., and subsequently served on a variety of committees, including the Coastal Shipping Advisory Committee, the Central Transport Consultative Committee (1948), the Road Haulage Disposal Board, and the Committee on the Administration of Crown Lands. He is Past-President of the Railway Benevolent Institution, and is a member of the B.T.C. Police Committee. Lord Rusholme was appointed the first Chairman of the London Midland Area Board, B.T.C., when the area boards were set up in January, 1955. He is a director of Thos. Cook & Son Ltd., and all associated companies.

Mr. R. J. Hitchcock, Labour Relations Officer, London Transport Executive, who, as recorded in our January 9 issue, has been re-designated Chief Labour Relations Officer, joined the Underground Group of Companies in 1923 in the Staff Office. He was appointed to the Department of the



Chief Staff Officer, London Passenger Transport Board, in 1933, and served in various sections of that department. In 1943 he was transferred to the Chairman's Office and, in 1945, became Secretary to the late Lord Ashfield, then Chairman of the London Passenger Transport Board. In 1946 he was appointed an Officer of the Board, as Secretary to the Chairman. He returned to the Staff Department, in 1947, as Establishment Officer. Following the re-organisation of the Staff Department, in October, 1955, Mr. Hitchcock was appointed Labour Relations Officer. He dealt with negotiations and agreements governing rate of pay and conditions of service for the administrative, supervisory and wages staff. In 1957 Mr. Hitchcock was appointed a Chief Officer of the London Transport Executive.

We regret to record the death on February 1, at the age of 63, of Mr. B. C. Randall, former Sales Manager, Rail & Road Transport, Formica Limited.

Mr. A. Quadir has been appointed Deputy Director (Planning) of the North Western Railway of Pakistan, and not the North Western Railway, India, as stated in our February 13 issue.

Mr. A. W. Norman has been elected President of the Retired Railway Officers' Society for 1959. Mr. J. W. Kerr has been re-appointed Hon. Secretary, and Mr. J. H. Laundy Hon. Treasurer. Mr. F. H. Sedgwick and J. T. Drinkwater have been re-elected Hon. Joint Auditors.

Mr. W. J. Richards, Chief Inspector to the Operating Officer, Western Region, British Railways, was invested as a Member of the Royal Victorian Order, at Buckingham Palace, on February 17. Mr. Richards, who was born at Merthyr Tydfil, is 58. He joined the Great Western Railway in 1914, and has made over 400 journeys with the Royal Train in the past 12 years. He has accompanied every member of the Royal Family.

#### INSTITUTION OF RAILWAY SIGNAL ENGINEERS

The following names have been entered on, or transferred in, the register of members of the Institution of Railway Signal Engineers:—

##### Member.

Mr. K. Subrahmanyam, District Signal & Telecommunication Engineer, Bombay, Western Railway of India.

##### Associate Members.

Mr. P. N. Gupta, Senior Instructor (Signalling & Communications), Railway Staff College, Baroda, India.

Mr. V. C. Jessani, Technical Assistant, Signal Engineer's Office, London Transport Executive.

Mr. S. C. Yip, Technical Assistant & Signal Inspector, Kuala Lumpur, Malayan Railways.

##### Associate Member to Member.

Mr. J. W. Irving, Signalling Assistant, Glasgow, Scottish Region, British Railways.

##### Student to Graduates.

Mr. D. M. Hall, Signal Engineering Department, Reading, Western Region, British Railways.

Mr. M. W. Heaton, Signal Engineer's Office, Earls Court, London Transport Executive.

Mr. P. G. Law, Technical Assistant, Chippenham, Westinghouse Brake & Signal Co. Ltd.

Mr. N. F. Reed, New South Wales Railways.

Profesor E. Wegelius, President of the Finnish Standards Association, has been elected President of the International Organisation for Standardisation. He took up his duties last month.

Mr. R. D. Armstrong, Vice-President, Accounting & Finance, Canadian National Railways, shortly will relinquish his appointment to accept a senior position outside the railways.

Mr. W. H. Scutt, District Traffic Superintendent, Southampton, Southern Region, British Railways, will retire on March 31. He will be succeeded by Mr. A. C. J. Payne, Freight Assistant, Line Traffic Manager's Office, South Eastern Division.

K.G.S. Bearing Co. Ltd. which, as recorded in our February 6 issue, has changed its title to F.A.G. Bearing Co. Ltd., has announced the following appointments: Managing Director, Mr. C. E. Marshall; Directors, Dr. Georg Schafer, Mr. Otto Schafer and Mr. P. D. Sage; Secretary, Mr. D. L. Ward; Commercial Manager, Mr. W. Piddock; Publicity, Mr. L. J. Rose.

Mr. T. W. Tyreman, Goods Agent, Boston, Eastern Region, British Railways, has been appointed Sales Assistant to the Traffic Manager, Sheffield. Mr. Tyreman began his railway career as a clerk, in 1928, and, after service at stations in Lincolnshire and in South Yorkshire, was appointed Goods Agent, Barrow Hill, in 1953. He became Goods Agent at Newark, in 1955, and at Boston in 1957.

Mr. G. R. Higgs, Assistant Chief Engineer, Traction Projects Department, Metropolitan-Vickers Electrical Co. Ltd., has been appointed Chief Engineer of that department. Mr. J. Beasley becomes Assistant Chief Engineer, Traction Control Department; he succeeds Mr. A. D. Ferguson, who is appointed Consulting Engineer, Traction Control Department. Mr. J. L. Russell, Assistant Chief Engineer, Special Applications Division,

Electronics Engineering Department, is appointed Chief Engineer, Railway Signals Department; responsibility for this department is relinquished by Mr. W. T. Gray, Chief Engineer Traction Control Department.

We regret to record the death on February 11, at the age of 71, of Mr. H. F. J. Bailey, Sales & Advertising Manager, Edgar Vaughan & Co. Ltd.

Mr. C. M. W. Thomas has joined the board of Klaxon Limited, as Commercial Director. Mr. A. C. Risbridger has been appointed General Manager.

Mr. L. J. Dunnett, Deputy Secretary, Ministry of Supply, has been appointed Permanent Secretary to the Ministry of Transport & Civil Aviation in succession to Sir Gilmour Jenkins, who will retire on March 31.

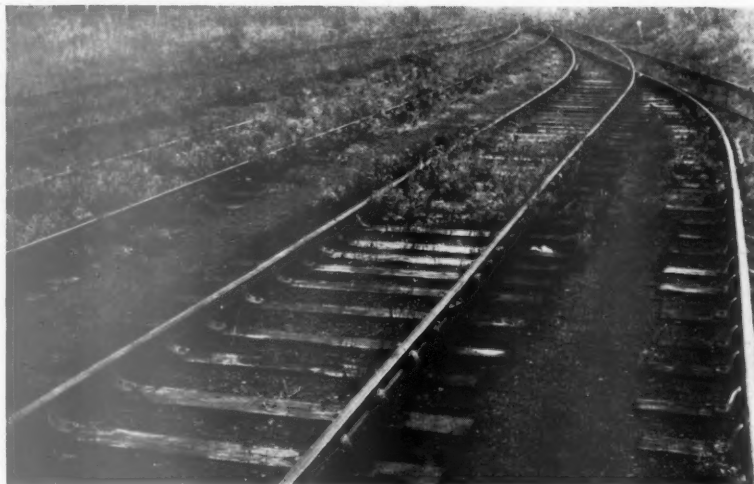
Mr. Bernard A. Ridley, Assistant Divisional Manager, South Eastern Division, British Road Services, has been appointed District Manager, London District, South Eastern Division. He succeeds Mr. H. Rossington who relinquished his appointment on medical grounds.

Mr. R. J. Chambers, Indoor Assistant (New Works), Signal Engineer's Department, York, North Eastern Region, British Railways, who, as recorded in our February 13 issue, has retired, joined the North Eastern Railway at York in 1909. The whole of his railway career has been spent at York and he has served under six Signal Engineers. He has been in charge of several important signalling installations. These include the introduction of colour light signalling between Northallerton and Darlington and at other places in the North Eastern Region. Mr. Chambers served in the Forces from 1915 to 1919. To mark his retirement, he was recently presented, by Mr. Wigram, Signal Engineer, North Eastern Region, with a bureau and a travelling bag subscribed for by his railway colleagues.



Mr. R. J. Chambers, retiring Indoor Assistant, York, after a presentation by Mr. Wigram, Signal Engineer, York (see above)

## NEW EQUIPMENT AND PROCESSES



### Railway Weed Control

A DEVELOPMENT programme for railway weed control, initiated at Chesterford Park Research Station in 1956 with Simazine, a chemical discovered by the Swiss company Geigy, has resulted in the production of Weedex, a highly effective herbicide. By the end of 1958, over 20 replicated treatments had been laid down on four sites on British Railways and sidings belonging to corporations and private companies. The British Transport Commission sponsored large-scale trials, and trials also were made on railways overseas.

It is claimed that the product, chemically 2, chloro 4, 6-bis-ethylamino-s-triazine, is ideally suited to railway weed control. The least soluble yet most phytotoxic soil sterilant available, it is taken up by roots and not absorbed by leaves. It causes death by inhibiting physiological processes. It presents minimal risk of

drift on adjacent crops, can be applied during wet or dry conditions and, because of its low solubility, is not leached rapidly from soil or ballast. Accordingly, it persists well, one seasonal application giving freedom from weeds even under the high rainfall conditions experienced during 1958.

A special technique has been worked out to maintain suspension in spray trains. This technique has been facilitated by the formulation of the chemical as a wettable powder of extremely small particle size.

Dosage rate per acre of track is 10 lb., a low figure made possible because it is required merely to keep the area weed-free and the clearance of a heavy infestation does not arise. Provided that the chemical is applied in good time, a high degree of control is maintained over a long period.

Railway advantages claimed for the product are: an indefinite dry-storage life; non-inflammability; non-toxicity to man and animals; a high degree of effective-

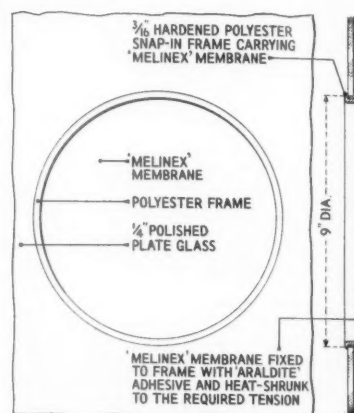
ness; non-corrosive properties; independence of weather conditions at time of application and during growing season; absence of electrical conductivity; non-interference with wheel adhesion; extreme persistence of action.

Once treatment has taken effect, track is free from infestation by weeds for at least a year. The illustration shows a trial stretch of track. Weedex has been applied in the foreground only.

Further details can be obtained from the manufacturer, Fisons Pest Control Limited, Chesterford Park Research Station, near Saffron Walden, Essex.

### Ticket-Office Window

A NEW type of speaking window for ticket offices has been developed by the Architect's office of the Chief Civil



Engineer, Eastern Region, British Railways.

The window consists of a sheet of a new transparent membrane called Melinex, produced by I.C.I. Limited. The membrane first is glued to a hardened polyester-resin frame and then heat-shrunk until it reverberates at the required pitch. The assembly is snap-fitted to an aperture in the plate glass of the ticket office front and is easily replaceable.

The adhesive used is Araldite, made by C.I.B.A. (A.R.L.) Limited, Duxford, Cambridge.

The new design will be used experimentally in the East-side ticket office at Liverpool Street Station.

### Tub Straightening

THE Blackhawk Porto-Power hydraulic equipment has been adopted for pit tub straightening by several collieries in the North and may be of interest to railway organisations in connection with repairing railway trolleys.

The use of hydraulics eliminates the heavy hammering previously required on repairs. As a result, four times as many tubs now can be straightened in a day without fatigue.

The illustration shows the equipment in use. It includes the Porto-Power 10-ton stroke ram and pump, and forms the basis of general-purpose equipment which also may be used for lifting, bending and



spreading, and for three-leg pulling gear for wheels and couplings.

Time taken to restore the tub in the illustration (see previous page) was 15 min. Cost of the equipment is approximately £40.

Further details can be obtained from the distributors in this country, E. P. Barrus (Concessionaires) Limited, 12-16, Brunel Road, Acton, London, W.3.

## Preformed Transmission Line Accessories

A RANGE of preformed line accessories has been developed from the principle that a wire possesses a strong gripping power when wrapped round a conductor, provided that the inner diameter of the wire helix is somewhat smaller than the outer diameter of the conductor. The accessories include line splices, guy-grips, dead ends, armour grip suspension units, and twin conductor spacers.

Dead ends can be used in place of all forms of conductor clamps and make-offs for homogeneous conductors, and are suitable for terminating catenary or conductor



wires for overhead electrification. They do not slip and they have the advantage that the conductor is not distorted in any way during its life, so that simple adjustment can be made at any time. Dead ends can be applied easily and quickly without skilled labour or special tools.

Preformed guy-grips are dead ends applied to stays. They are designed to hold the ultimate breaking strength of all stay wires up to and including 70-ton quality, and may be used with stay insulators of all the standard types. The guy grips do not slip, and are stronger than the stay wires they are designed to hold. They can be applied and removed at least four times without losing the gripping power equal to the rated breaking load of the stay strand. The accompanying illustration shows a guy grip in process of application to a stay.

The line accessories are available for all types of conductor, including high tensile steel, and the materials used are compatible with the conductors for which they are designed.

The price of a dead end varies from 4s. 9d. to 11s. according to length and rated breaking strength. Delivery is ex stock. Further details can be obtained from the manufacturer, Preformed Line Products (Great Britain) Limited, Andover, Hampshire.

## Milling Equipment

NEW milling equipment available includes the "Titanic" milling chuck, screw-shank high-speed steel-end mills, and slot drills.

The chuck collet is provided with a separate screwed collar to ensure true running. This, together with the great strength of the collet, results in a minimal rate of collar-dog breakage. If this should occur, collars are replaced free of charge. Gripping power has been improved. Two chucks cover shanks  $\frac{1}{4}$  in. to  $1\frac{1}{2}$  in. dia., and cutter diameters of  $\frac{1}{8}$  in. to  $2\frac{1}{2}$  in. Chucks are packed in a durable cork-lined steel container with accessories and simple diagrammatic instructions.

Fast speeds and feeds are possible with the end mills and slot drills which are claimed to exceed all existing standards of performance. A new tooth form provides good swarf clearance, preventing overheating and premature failure, and the form of the end teeth recess prolongs the life of the cutter and simplifies re-grinding.

Further details can be obtained from the manufacturer, Samuel Osborn & Co. Ltd., Clyde Steel Works, Sheffield, 3.

## High-Speed Cutter

A NEW machine for constant high-speed cutting, the S.I.F. Colibri Cutting Machine, is available.

Operated by a clockwork motor, it is designed to give a smooth and steady action under all conditions of working. No finishing is required.  $11\frac{1}{2}$  ft. can be cut at a stretch.

The drive on the sheet metal is by a toothed steel traction wheel.

Speed control is continuous and speed may be adapted for sheet thicknesses ranging from  $\frac{1}{8}$  in. to 3 in. A swivel knob on the motor housing operates the brake.

The machine will cut by hand any line or sheet traced on the workpiece and straight welded sheets under any angle. It will cut rings, flanges, or circles in any diameter with square or bevel edges.



Delivery is from stock. Further details can be obtained from the manufacturer, Suffolk Iron Foundry (1920) Limited, Stowmarket, Suffolk.

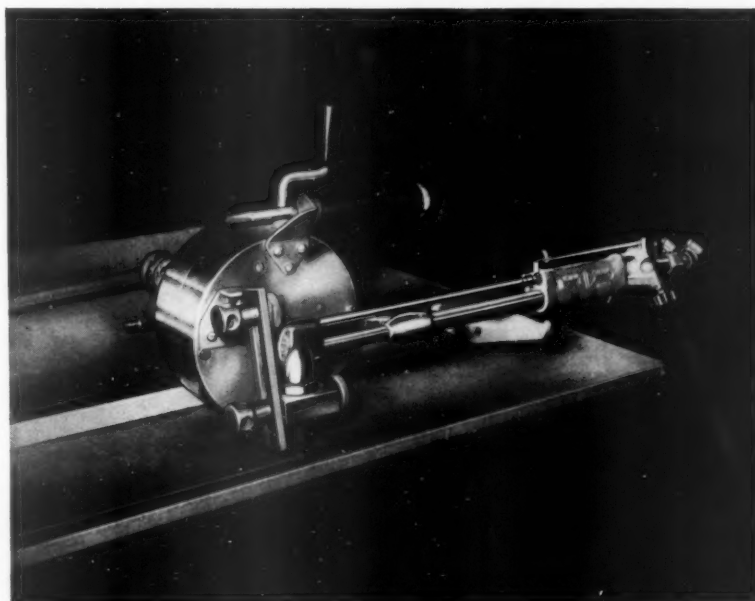
## Temperature Recorder

A NEW transistorised four-point temperature recorder is available which can be used for checking the temperatures of exhaust diesel gases when tuning diesel engines.

The instrument has a 10-in. dia. chart and operates from the normal 50-cycle mains supply. Platinum wire resistance bulbs are used as the temperature-sensitive elements and it is claimed that low range spans are easily achieved.

Particular features are improved stability control and very high reproducibility.

Advantages claimed for this type of temperature recorder are: the high degree of accuracy obtainable with platinum wire resistance bulbs; the economy of using and







re-using the elements without the necessity of renewing expensive capillary tubes; ease of remote control, and, on multi-point indicating installations, reduced costs.

The instrument also is available as a single-point recorder with electric or pneumatic control.

Further details can be obtained from the manufacturer, Fielden Electronics Limited, Wythenshawe, Manchester.

### Electronic Diameter Control and Mating Equipment

**A**UTOMATIC control of work diameter can be provided on grinding machines by instrumentation which registers the size of the workpiece and stops the machine when the required diameter has been reached. The instrumentation used is manufactured by Taylor-Hobson and consists of an amplifier, control system, and work-gauging caliper, which can be applied either by hand, or by patented automatic arrangement. All machine controls can be coupled so that the only

operation necessary is to load the workpiece and press a starting button, after which the workpiece will be finished to size automatically.

With this means of diameter control, long consecutive runs of workpieces to within 50 millionths of an inch can be produced. The method can be applied either on straight plunge-cut grinding or to longer workpieces which require some movements of the main table during grinding.

The caliper gauges can be supplied in two sizes as standard 1 in. to 4 in. dia. and 1 in. to 7 in. dia. capacity. When only hand control to the gauging unit is fitted, the gauge supplied is  $\frac{1}{8}$  in. to 3 in. capacity.

It also is possible to over control the instrumental system by measurements taken from a bore which has to be matched. This bore, being measured automatically by another electronic measuring instrument, then alters and compensates the setting of the diameter control instrument so that the diameters produced always are within a given tolerance of clearance or interference.

Further details can be obtained from A. A. Jones & Shipman Limited, Narborough Road South, Leicester.

### Four-Stage Honing Machine

**T**HE "150" Hydrohoner is a new honing machine which can be bought complete with attachments to make it fully-automatic or in its basic form ready to receive additional equipment as required. It is priced to appeal to manufacturers with limited capital or with comparatively low-volume production requirements.

It is a horizontal machine with a stationary bridge to accommodate work fixtures and optional equipment. The design facilitates addition of automatic work-handling devices and simplifies job changeover.

The basic machine is mounted on a rigid work-table support. The reciprocating carriage is hydraulically-actuated, and carries the spindle. Initial tool expansion and collapse is hydraulic and the head is adjustable for manual tool feed expansion and stonewear compensation.

Spindle rotation is by variable-speed belt-drive, and gravity coolant drainage is provided. An additional coolant service is available.

An automatic hydraulic feed control and stonewear compensation device known as the "Microdial" can be added to the basic machine at any time. This expands the tool at a controlled positive rate and compensates for the abrasive used in removing the stock from each bore. Thus, the tool diameter remains constant.

Automatic sizing by a device known as the "Microsize" eliminates manual gauging and automatically ends the microhoning cycle when size is reached. Sizing is by gauge rings which permit use of the tool itself as a gauging member. On each reciprocating stroke, the ends of the stone-holders enter the sizing ring. The abrasives feed outward as microhoning progresses and, on reaching size, the tabs actuate the gauge ring. This in turn trips a switch, stopping the process.

The fourth state—complete automation, is accomplished with the addition of any of a wide variety of automatic work-handling devices.

The machine has a 12-in. stroke and 1½-in. maximum work diameter capacity. Overall height × width × length is 58 in. × 34 in. × 52 in. Table width × length is 17 in. × 16 in.; spindle rotation speed is variable; reciprocating speed range is from 0 to 60 S.F.P.M. Approximate gross weight is 4,400 lb.

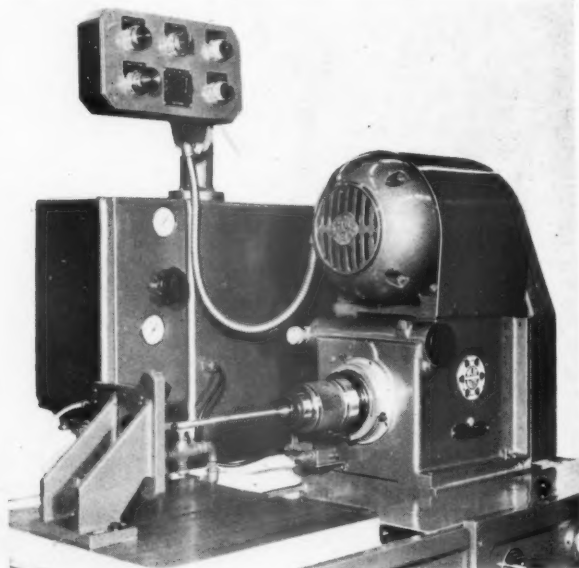
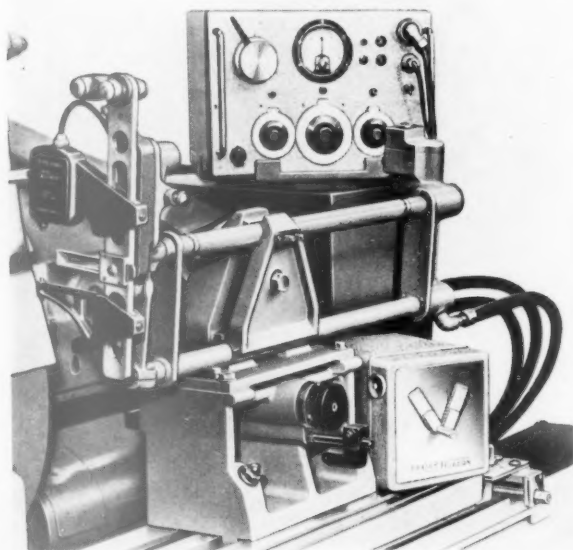
Further details can be obtained from A. A. Jones & Shipman Limited, Narborough Road South, Leicester.

The photographs below show (left) the electronic diameter control and mating equipment and (right) the "Microdial" attachment to the "150" Hydrohoner.

### Diamond Honing Service

**B**Y an agreement with Diagrit Limited, Tonbridge, Kent, A. A. Jones & Shipman Limited of Leicester now offers a comprehensive service on diamond honing.

By this agreement, A. A. Jones & Shipman Limited now is the sole selling agent throughout the world for Diamond hones, which will be moulded by a special process at Leicester and will be available for use on all types of honing machines.



## Ministry of Transport Accident Report

*Borough Market Junction: August 12, 1958, British Railways, Southern Region*

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the accident which occurred at about 7.30 a.m. on August 12, 1958, when the 6.52 a.m. electric train, Sanderstead to Cannon Street, consisting of two 4-coach and one 2-coach sets, with leading and trailing bogies of each 4-coach set motored and also the last bogie in the train, became derailed at the eighth coach when passing slowly over badly worn facing points, controlled by No. 26 lever in Borough Market Junction power signal-box, where the routes to Charing Cross and Cannon Street diverge. The eighth coach, much shaken, was forced against the viaduct parapet and the ninth became separated from it, slewed across the lines leading to Charing Cross and tilted. The eighth coach must have been drawn forward with front bogie proceeding to the right towards Cannon Street. The left-hand wheels of the trailing bogie became derailed and it was diverted to the left, being followed by the leading bogie of the ninth vehicle, until the body made sidelong contact with the "V" of the parapets of the bridges and was guided back towards the Cannon Street route, becoming separated from the trailing bogie. The front bogie also became derailed by this crabwise movement. The automatic coupling between the eighth and ninth coaches parted vertically and the tenth coach remained on the rails. Interior damage to the derailed coaches was not heavy.

Six passengers were taken to hospital with minor injuries but were not detained. Help arrived promptly and power was quickly cut off. Charing Cross and Cannon Street stations had to be closed. Services were resumed from the latter at 4.35 p.m. and the former at 8.25. The steel spans of the viaduct had to be supported specially from the street to render it safe for the breakdown cranes to begin lifting. The weather was fine.

The lines are track circuited throughout and equipped with four-aspect colour-light signals and electric point machines. The whole of the apparatus, including that in the junction signalbox was found to be in proper order, as were the bogies of the derailed coaches and their attachments. Tyre profiles of the derailed wheels were almost un worn. It was clear that the accident had arisen from the worn state of the left-hand switch and stock rails of the facing points.

### Details of Permanent Way

Weekday movements over these points total about 210 towards Charing Cross and 65 towards Cannon Street and permanent way renewals, except very minor ones, must be carried out at week-ends. The points consisted of 95 lb. bull head carbon steel rails with "E" type curved switches and stock rails of "joggled" design: the toe is substantial,  $\frac{1}{2}$  in. thick, with stock rail kinked to correspond and providing a smooth alignment on the running edge from stock rail to switch when the latter is closed. (These points are on a 12 $\frac{1}{2}$ -ch. right-hand curve from the inside of which the Cannon Street line takes off on a 7-ch. curve; immediately beyond this the line changes curvature to the left, towards Charing Cross.) This "joggled" design is used frequently where traffic is dense and wheels bear heavily against the switch

rails, since it allows much more metal at the thin end of the blade. Manganese steel switches are authorised for this location as wear on carbon steel is very rapid. Replacements were on order, but assembly had been delayed by the great amount of work in connection with the modernisation programme: the previous manganese switches had therefore been replaced by carbon steel on March 15, 1958. The crossing frog, however, part of a compound assembly and of special design, were still of cast manganese. The points were not damaged and score marks showed where the wheel flanges had travelled over the left-hand switch-rail and dropped outside. The crossing assembly fortunately remained undamaged.

The switch rail was excessively side cut; its top, for the first two feet, was chipped, leaving it flattened instead of sloped to fit

Evidence was given by the signalman concerned with the movement of the train through the junction, and by its motorman and guard, covering the events of the derailment and the steps taken to protect the lines, etc., thereafter.

### Inspection of Points

The ganger in charge for the past four years said he inspected the points two days before, a Sunday, and found a sliver about 2 in. long broken off the top of the switch rail and concluded from its generally worn state and that of the stock rail that both ought to be changed. Early the next morning he reported this to his inspector and was told arrangements would be made to change the items during the next week-end.

The permanent way inspector also had, by himself, looked at these points on the



*Worn switch and stock rails, removed from the track, involved in the derailment at Borough Market Junction, August 12, 1958*

the stock rail, also excessively side cut. The "joggle" had disappeared on the running edge and alignment was regular along this rail on the Charing Cross route which carries three times as much traffic as the other. When closed for the Cannon Street, or right-hand, route the toe of the left-hand switch projected inside the running edge of the stock rail; its flattened top provided a sort of ramp for wheel flanges to ride up. The wheels would, of course, be bearing against the left-hand rail because of the curvature.

Photographs in the report, one taken after removal and re-assembly of switch and stock rail and reproduced in this summary by permission, show the heavy side wear and even alignment of the worn stock rail edge, with no trace of "joggle," although a vestige can be seen at the bottom of the head, just clear of the switch toe. The ramp effect caused by battering can be seen.

Sunday, and decided that the switch must be changed. He said he had been keeping a watch on the wear on them for some time, knowing they must soon be renewed, but he was not unduly concerned about them on the Sunday. They were "just the same as a lot more on the section; you go round and notice these jobs want doing, or are getting to near the time when they want to be done. . . This was, more or less, how he looked at that one." He always paid particular attention to these points, subject to exceptionally heavy wear. Before the last renewal on March 15 the previous set of manganese switches had been laid nine months earlier and the set before that lasted only ten.

Shortly after the derailment he found the switch fitting well and not distorted by the wheels riding over it. A piece of steel 2 to 3 in. long had been broken off the top edge of the blade towards the toe; there were derailment marks on the run-

ning surface. Cant was  $\frac{1}{4}$  to  $\frac{1}{2}$  in.—the proper amount—and gauge  $\frac{1}{4}$  in. wide, also correct for the curvature, but this was measured between rail faces, not the running edges, where it must have been at least  $\frac{1}{4}$  in. wide due to wear. He then noted that stock rail side wear was at the maximum permissible, but cross section profiles at 6 in. intervals showed heavy side cutting on both stock and switch rails, in places appreciably more than the approved limiting angle of wear, 26 deg. from the vertical. These also showed the ramp characteristics on the switch rail.

In view of the inspector's insistence on the rate of wear, Colonel Reed asked for particulars of renewals during recent years and received the following:—

Date renewed	Material	Life in months
April 13, 1947	Manganese steel	22
February 6, 1949	" "	21
November 12, 1950	" "	22
September 7, 1952	" "	17
February 28, 1954	Carbon steel	13
March 20, 1955	Manganese steel	17
August 19, 1956	" "	10
June 23, 1957	" "	9
March 16, 1958	Carbon steel	5
August 12, 1958 (after accident)	" "	—

It was stated that since the introduction of 10-car electric trains in March, 1957, followed by 12-car diesel trains in June, 1958, rate of wear had appreciably increased.

#### Inspecting Officer's Conclusion

Deraiment was due to an excessively worn switch and stock rail; their condition had not been overlooked by the inspector but he made a serious error of judgment in not renewing them some time earlier. He may have allowed himself to be influenced by past experience of rate of wear and been reluctant to renew switch and stock rail earlier as they had been there for so short a time; this cannot, however, be regarded as an excuse for failing to deal with the situation on its merits.

There were two interesting features worthy of notice, first the side cutting throughout the stock rail, caused by the heavy traffic to Charing Cross, resulting in the top of the switch rail having no lateral support against that rail when closed for the Cannon Street route; second, the complete disappearance of the "joggle" on the stock rail running edge. This, combined with side cutting, exposed the blunt end of the switch rail to battering by every train travelling to Cannon Street. Their wheel flanges would all have been bearing hard against the outer rail and pressure on the unsupported switch where it was thinnest, combined with batter on its exposed nose, caused the head to be chipped and broken away for about the first 2 ft., a rough ramp being developed.

Wear must have reached a critical stage when the rear bogie of the eighth coach came to the points and the broken piece found by the inspector may have become detached shortly before or as this bogie passed; the rough fractured surface then would have provided further grip for the wheel flange to mount to the rail table which in turn may have been assisted by the application of power.

The motorman said he applied power on coming into view of the next signal, set to be seen on the curve at about 120 yd. At this moment the eighth coach would have been over the points with the trailing motored bogie a few yards from them.

Apart from the excessive wear in general the absence of the "joggle" was, in Colonel Reed's opinion, a noticeable danger sign which the inspector did not appreciate; he considers it may be appropriate to draw the attention of the engineering staff to the significance of such wear.

Colonel Reed discussed with the Chief Civil Engineer's staff the advisability of using the joggle design on a turnout of similar flexure where there is a preponderance of traffic over the straighter route but was advised that switches and stock rails of the alternative undercut or chamfered designs would wear so quickly as to be unacceptable. He was assured that supply arrangements for manganese steel replacements for switches such as these were being overhauled so that material will be available when required.

The increase in rate of wear, attributed to the introduction of longer trains, is

much greater than that of the number of wheels now passing and may well be due, Colonel Reed considers, to the running characteristics of this stretch of line. Though it was clear that power was applied to the train, which had been coasting, just before the trailing motored bogie of the eighth coach reached the crossing there must have been many occasions when the motorman of an eight-car train lingered over applying power, after seeing a clear signal ahead, for a second or two while the train cleared the points. With two more coaches the trailing motored bogie—as also that of a 12-car diesel train—would be often under power when passing the points; this may account for the disproportionate increase in rate of wear. Its significance from the point of safety is not very direct provided the inspectors are aware that such heavy wear may develop and Colonel Reed has no doubt they will now be fully alert to it.

## British-Owned Railway to Cease Operation in Bolivia

*Antofagasta (Chili) & Bolivia Railway Co. Ltd.  
unable to continue in unsatisfactory conditions*

Services in Bolivia of the Antofagasta (Chili) & Bolivia Railway Co. Ltd., were expected as we went to press to be withdrawn by the company as the result of its inability to continue to operate in unsatisfactory conditions. The possibility of this step was mentioned by Mr. H. C. Drayton, Chairman of the company, at the annual general meeting as reported in our December 19, 1958, issue. Conditions have since deteriorated.

The board last week informed the Bolivian Government that the company would suspend operations of its railways in Bolivia on February 18.

The operating loss in Bolivia for 1958 is estimated at £500,000, and for the current year its indications are that it would be half as much again. Traffic have fallen by 40 per cent. Inflation and depreciation of exchange have increased the cost of purchases of stores, and so on. The company points out that it has not been allowed to introduce economies.

Although wages and costs have increased, railway charges have been frozen since December, 1956. In 1957 they were even reduced for certain commodities. The company states that interference by the railway trades unions has resulted in physical violence, expulsion of key British employees, direct instructions to the company's employees in contradiction of the orders of the management, and general resistance to the adoption of economy measures.

#### Offer to Sell

For more than a year the company has made representations to the Bolivian Government, seeking authority for remedial measures. It also offered, subject to the necessary consents, to sell the railways to the Government, on generous terms. The company also expressed its willingness to continue to operate the railways for Government account, while the Government considered the whole matter.

No decision by the Government was forthcoming on the long-term sale offer, or authority for the measures of assistance necessary for operation by the company.

The Government appointed yet another commission to study the Railway problem, with instructions to report at the end of four months, or longer if necessary. It also decreed that, pending the report of

the commission, the Railways should, if necessary, be operated by the *Dirección* of Railways at the cost of the company. To this the board could not agree.

## Frictional Buffer Stop Demonstration

The first public demonstration in this country of the frictionally-controlled sliding buffer-stop attached to the rail by adjustable clamps, manufactured by Godwin Warren (Engineering) Limited of Bristol, under licence from A. Rawie A.G. of Osnabrück, was held last week at a steelworks siding in Port Talbot, Glamorganshire. Similar buffers are to be installed near the test site to protect stationary plant situated beyond the end of a siding. A brief description was given on page 663 of our June 7, 1957, issue.

In tests of the buffer-stop alone, a loaded rake of flat wagons weighing 234 tons gross and travelling at 5 m.p.h. was arrested in 2 ft. 4½ in. From 7½ m.p.h. it stopped in 5 ft. 11 in.

Two additional frictional retarders gripping the rails were spaced at intervals of about 3 ft. behind the buffer-stop and attached to it by horizontal swivelling links. With these in use, a 400-ton rake moving at 5 m.p.h. was arrested within 7 ft. of the point of impact. The same equipment, after re-setting, stopped over 700 tons from 6 m.p.h. in a distance of 12 ft. 1 in. In no test was there any apparent disturbance to the load of ingot moulds.

#### Re-setting Buffer Stop

Re-setting was by loosening the clamp nuts and towing the buffer back to its original position. The cable used for this purpose was released automatically from the locomotive or wagon coupling by means of a trigger attachment which engaged with a simple interrupter placed between the rails.

Special reinforcement of the track was necessary for testing with the additional retarders and for the heavier loads.

#### Rail Brake

A rail brake shoe, designed on the same principle, also was demonstrated, with friction clamp partially applied. This



smoothly arrested a rake loaded to 100 tons gross, from impact speeds of 3 m.p.h. and 6½ m.p.h. within 2 ft. 5 in. and 22 ft. 8 in. respectively. The rail brake shoe has a miniature ramp and wheel stop mounted on a skid. The demonstration was attended by representatives of British Railways, including Mr. K. Brinsmead, Assistant Civil Engineer (Permanent Way), British Railways Central Staff.

## Staff and Labour Matters

### Railway Pay Inquiry

The Railway Pay Advisory Committee, which is the joint body comprising Commission and Trade Union representatives appointed to give general guidance to the Railway Pay Committee of Inquiry, has appointed a small working party or joint sub-committee of representatives of the Commission and the Trade Unions. This will assemble information for the Committee of Inquiry and make suggestions regarding the stations, depots, and offices to be visited by the investigating officers appointed from outside railway service by the Committee of Inquiry.

The first meeting of the Joint Sub-Committee took place on February 16, when a general discussion took place on points of procedure. A preliminary list of stations which it is suggested the investigating officers should visit was agreed.

The terms of reference to the Committee of Inquiry provide that the committee shall conduct an investigation into the relativity of the pay of railway salaried and conciliation staff with the pay in other nationalised industries, public services and appropriate private undertakings as agreed between the parties or on the instigation of the pay committee itself, where reasonable and useful comparisons can be made. A preliminary list of industries and services which the Commission and unions consider should be looked at in regard to job comparability already has been submitted to the Committee of Inquiry in respect of clerical staff.

It is expected that the investigating officers will commence their detailed investigations very shortly.

## Questions in Parliament

### Traffic Advisory and Travel Committees

Mr. J. A. Biggs-Davison (Chigwell—C.) asked the Minister of Transport & Civil Aviation on February 11 what steps he had taken to avoid overlapping of the work of the London and Home Counties Traffic Advisory Committee and London Travel Committee, respectively.

Mr. Ernest Davies (Enfield E.—Lab.) asked what changes in the terms of reference of the London and Home Counties Advisory Committee had been made as a result of the appointment of the London Traffic Committee; and what steps the Minister had taken to ensure that the duties of the two committees did not result in duplication of work.

Mr. Harold Watkinson, replying in a written answer to both questions together: There has been no change in the terms of reference of the London and Home Counties Traffic Advisory Committee since I appointed the London Travel Committee. A large part of the work of the London Travel Committee is concerned with rail travel and with the staggering of working hours. As regards road matters, it should be easy to avoid duplication, because both committees have the same chairman, two

of my officials and four other members serve on both committees, and their secretaries are in close touch.

## Parliamentary Notes

### South Wales Transport Bill

The South Wales Transport Bill, which provides for abandonment of the Swansea & Mumbles Railway, was read a second time in the House of Lords on February 17.

The Earl of Home, Secretary of State for Commonwealth Relations, stated that several petitions had been lodged against the Bill since the previous debate. It could be given a second reading and sent to a committee without the House in any way pronouncing upon it.

Lord Merthyr, Chairman of Committees, said that if the House wished that the procedure should be looked at he would initiate a discussion. Some of the petitions against the Bill might be withdrawn.

## Contracts and Tenders

### Road vehicle chassis for Ulster Transport Authority

The Ulster Transport Authority has placed contracts to the value of some £110,000 with the Leyland group of companies for the supply of 68 goods vehicle chassis. Leyland Motors Limited and Scammell Lorries Limited of Watford share one contract for the supply of 25 Leyland Comet-Scammell tractor chassis. Albion Motors Limited of Glasgow has also received a contract from U.T.A. for 43 lightweight Claymore chassis. They are designed specifically for the distributive trades and for medium distance haulage, and are powered by a 72-h.p. Albion horizontal diesel engine mounted underneath the body floor.

British Railways, Eastern Region, has placed the following contracts:—

J. Jeffreys & Co. Ltd.: supply, delivery and installation of boiler plant, heating system, oil storage equipment, and all piping, for the extension to Ilford Electric Train Depot

W. & C. French Limited: manufacture and delivery of precast concrete footbridge to replace footbridge No. 62 between East Ham and Barking, and No. 25 between Barking and Dagenham Dock, and reconstruction of footbridge No. 23 at Ripple Road, between Barking and Dagenham Dock.

British Railways, North Eastern Region, has placed the following contracts:—

Hymatic Engineering Co. Ltd.: four mobile compressors

Cawood Wharton & Co. Ltd.: construction of diesel repair and running sheds, Leeds Neville Hill Multi-Unit Diesel Depot

M. Harrison & Co. (Leeds) Ltd.: concrete culvert extension and steam division, Crofton

Hatchett & Co. Ltd.: six oil storage tanks, Leeds Neville Hill Diesel Depot

Beck & Co. (Meters) Ltd.: eight oil dispensing units, Leeds Neville Hill Diesel Depot.

British Railways, Scottish Region, has placed the following contracts:—

P. Graham & Sons: erection of new signalbox, Perth Marshalling Yard

Standard Telephones & Cables Limited: provision of train describer apparatus, Millerhill Marshalling Yard, Edinburgh

The Motherwell Bridge & Engineering Co. Ltd.: provision of four 4,000 gall. oil storage tanks, Haymarket Motive Power Depot, Edinburgh

Whatlings Limited: site works for reconstruction of overbridge No. 9, Lochgelly

Aerocem (Scotland) Limited: maintenance work, Tweed Viaduct, between

Galashiels & Melrose, and Shankend Viaduct, between Hawick & Riccarton

Standard Telephones & Cables Limited: provision of train describer apparatus, Newton

Ericsson Telephones Limited: supply and installation of telephones and associated apparatus, Kelvinhaugh Junction to Airdrie

The Scottish Construction Co. Ltd.: supply of prestressed concrete beams and precast concrete units, Hawick Street overbridge, No. 8, Yoker

W. T. Glover & Co. Ltd.: installation of 25-kV. gas filled power cable and associated pilot cable between Parkhead Feeder Station and Finnieston Sub-Feeder Station and between Finnieston Sub-Feeder Station and Westerton Sub-Feeder Station.

British Railways, London Midland Region, has placed the following contracts:—

The Turriff Construction Corporation Co. Ltd.: construction of traverser pit at Crewe Locomotive Works

William Jones Limited: earthworks and drainage at Cricklewood Diesel Repair Shop

Aerocem Limited: strengthening of up side embankment between Leighton Buzzard and Bletchley

O. Atkinson & Sons Ltd.: supply and erection of structural steelwork for new main repair shed and workshop at Crewe District Electric Depot

Matterson Huxley & Watson Limited: supply and erection of steelwork at Liverpool Huskisson Goods Station

Leonard Fairclough Limited: construction of additional span to bridge No. 5 at Norton Bridge branch to accommodate the widening of the Winchester-Preston Trunk Road A34

Edward Wood & Sons Ltd.: new boiler house at Carriage & Wagon Works, Derby

Hughes & Ellison Limited: supply and erection of steelwork for new shed over turntable roads in Crewe North Motive Power Depot

The Medway Buildings & Supplies Limited: temporary accommodation for staff at Crewe

J. H. Fryer Limited: alterations and extension to boiler house at Derby Locomotive Works Power Station.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follows:—

### From Pakistan:

12 items of solid-drawn steel boiler tubes with trimmed ends

3 items of steel superheater boiler flue tubes.

The issuing authority and address to which bids should be sent is the Chief Controller of Stores, North Western Railway, Empress Road, Lahore. The tender No. is 210-S/2-III(PIL). The closing date is March 3, 1959. Local representation is essential. The Board of Trade reference is ESB/3596/59.

7 items of superheater element tubes, steel, complete with clamps, washer supports and bands.

The issuing authority and address to which bids should be sent is the Chief Controller of Stores, North Western Railway, Empress Road, Lahore. The tender No. is 210-S/3-IV(PIL). The closing date is March 2, 1959. Local representation is essential. The Board of Trade reference is ESB/3597/58.

#### From Korea:

1,120 locomotive tyres  
100 tonnes of pig lead.

The issuing authority and address to which bids should be sent is the Office of Supply, Government of the Republic of Korea, Seoul, Korea. The tender No. is 414-R. This purchase will be financed by the International Cooperation Administration (I.C.A.), the agency through which the United States Government gives economic and technical assistance to other countries. The closing date is March 3, 1959. The Board of Trade reference is ESB/3721/59/ICA.

65,000 untreated timber sleepers, 7 in. x 9 in. x 8 ft.

The issuing authority and address to which bids should be sent is the Office of Supply, Government of the Republic of Korea, Seoul, Korea. The tender No. is 415-R. This purchase will be financed by the International Cooperation Administration (I.C.A.), the agency through which the United States Government gives economic and technical assistance to other countries. The closing date is March 3, 1959. The Board of Trade reference is ESB/3722/59/ICA.

#### From Burma:

200 lengths of boiler tube, 4 in. outside dia. by 3½ in. inside dia. by 18 ft.

The issuing authority and address to which bids should be sent is the Director General, Union of Burma Purchase

Board, St. John's Road, Rangoon. The tender No. is IIIB/109/P&M. The closing date is March 2, 1959. The Board of Trade reference is ESB/4176/59.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lac House, Theobalds Road, W.C.1).

## Notes and News

**Rhodesia & Nyasaland Loan.**—The Federation of Rhodesia & Nyasaland has offered £10,000,000 of 6 per cent stock, 1978-81, at a price of £99, on the London Stock Exchange. Lists were opened and closed yesterday. It is not known what proportion of the loan will be used for road and rail development.

**Two Trains Collide in Fog in the Southern Region.**—The 9.40 a.m. electric train from Charing Cross to Gillingham, British Railways, Southern Region, ran into the back of the 9.25 a.m. electric train from Charing Cross to Dartford at a bridge over the Burnham Road on the Crayford spur line between Dartford and Slade Green last Tuesday. The Dartford train was stationary, and the second coach from the end telescoped under the impact. Eighteen passengers received minor injuries, but only two were detained in hospital.

**New Entrance and Booking Hall at Dundee Tay Bridge.**—A booking hall with centralised ticket and enquiry office was opened recently at Dundee Tay Bridge Station, British Railways, Scottish Region. The building, which is at street level, has a glass frontage for its entire height. Amenities for the staff are situated on the upper floor. A forecourt affords parking space for motorcars. Ceilings are finished with coloured acoustic tiles. Floors from the booking hall to the staircase landing are of heavy-duty rubber tiles. There are four clear-glass hygienic phone booking windows in the ticket office, framed in anodised aluminium. Panelling and furniture are in sapele mahogany veneer and chairs upholstered in texturide. Heat from a gas-fired boiler is radiated throughout the new building. Access is by a new overbridge connecting with a

separate access from South Union Street. The building was opened by the Lord Provost of Dundee, Mr. William Hughes. Those present included Mr. W. G. N. Walker, Member of the Scottish Area Board of the B.T.C., and Mr. B. R. Temple, District Commercial Manager, Dundee.

**Model Railway Club Exhibition.**—The Model Railway Club exhibition of railway models of all kinds will open at the Central Hall, Westminster, S.W.1, on March 31, from noon to 9.30 p.m. For the remainder of the week it will be open from 10.30 a.m. to 9.30 p.m.

**Special Ticket Check on L.T.E. Underground.**—A "route test" check of tickets was held on the London Transport Underground on February 13, 14, and 15, to obtain information on routes used by passengers and the density of traffic on different sections. Tickets were inspected at all interchange stations. The data obtained will be analysed and used as a basis for planning.

**Railway Students' Association: Golden Jubilee Celebrations, 1959.**—The Railway Students' Association will celebrate its Golden Jubilee during 1959, and are inviting to London a few guests from the staffs of the transport administrations of France, Belgium, Holland and Switzerland. The period chosen is the week-end covering the dates April 3 to 7. Visits have been arranged to transport installations in the London area; also a diesel railcar trip from Stratford, Eastern Region, to Stewarts Lane, Southern Region, on Saturday afternoon, April 4. In the morning an address will be given by Major-General L. Wansbrough-Jones, at the London School of Economics, and in the evening a golden jubilee dinner and dance at the Chatham Rooms, Victoria, S.W.1.

**British Institute of Management.**—Mr. W. J. Carron, President of the Amalgamated Engineering Union, and Lord McCordquodale, will be the principal speakers at the annual open meeting of the students and graduates section of the London Branch of the British Institute of Management, to be held in the Fvrie Hall, 309, Regent Street, London, W.1, on April 7, at 7 p.m. Expanding productivity will be the topic discussed and Mr. Carron



Frontage of new booking hall at Dundee Tay Bridge Station.



Interior showing (right) glazed frontage

will put forward his views of what trade unions can and should contribute, and also the part he thinks management should play. Lord McCordquoadie will comment on the part top management must play and also what, in his opinion, should be the contribution of the trade unions to expanding productivity. Sir Charles Norris, director of the British Productivity Council, will introduce the speakers. Admission will be by ticket only.

**Euston Players Variety Bill.**—On March 6 and 7, the Euston Players will present at the King George's Hall, Great Russell Street, London, W.C.1, three one act plays, entitled "The Laboratory," by David Campton, "The Monkey's Paw," by W. W. Jacobs, and "The Proposal," by Anton Chekov. The Euston Players have entered these three plays for the British Drama League Competition and the London Midland Drama Festival to be held later in the year.

**All-In Tours by Rail.**—The number of enquiries about all-in tours to Ireland, Scotland and the Isle of Man, which are being operated by British Railways and Creative Tourist Agents, indicate that there are likely to be more passengers than ever making use of the facilities this year. These all-in tours, which include combined rail travel, daily motor tours to beauty spots, hotel accommodation and meals en route, range from £20 a week. Last season over 8,000 took advantage of the facilities.

**Netherlands Rolling Stock Merger.**—The Beynes Rolling Stock Works at Beverwijk, Holland, and the United Engineering Works, which comprises Werkspoor of Amsterdam and Stork of Hengelo, have announced that their activities will be combined in future. The merger has been brought about to attain a rationalised and efficient production for competition in the international market. United Engineering Works is to issue shares to the Beynes shareholders on an equal nominal value exchange basis.

**Demolition of Stockport Edgeley Tunnels.**—Demolition of the three tunnels traversed by five tracks at Stockport Edgeley, British Railways, London Midland Region, and their replacement by overhead bridges are stated to be up to schedule. Demolition is necessary to provide clearance for wiring for a.c. electrification of the Crewe-Manchester line. Work on the southern tunnel has already been completed and the new bridge is in use. The property on the other two tunnels has also been removed, and part of the northern tunnel demolished by explosives. The walls are being strengthened. Removal of the middle tunnel will begin shortly. The work is phased to minimise dislocation of road traffic.

**Alterations at Dover Marine.**—Alterations are being carried out at Dover Marine Station, British Railways, Southern Region, so that electric trains can be dealt with. The station will be closed down for a week from tomorrow (Saturday) so that the most important part of the work can be completed. Cross-channel passenger services other than the motorcar and train ferries, will be diverted to Folkestone until the end of the month. Sailing and arrival times will be changed by a few minutes, but boat trains will leave London at the normal times. During the week in which the station is closed the track layout will be altered to allow room for the platforms to be lengthened to take 12-car multiple-unit trains. A start will

be made on installing colour-light signalling. Work also will begin on a covered footbridge to connect the station with the train ferry dock.

**Staff and Office Accommodation in Workshop Marrying Yard.**—Work has begun on three buildings in Workshop Marrying Yard, Eastern Region, to contain stores, offices, messrooms, lavatories, and locker rooms. Two buildings are in traditional brick construction with a timber roof. The third, sited on newly made-up ground, is of pre-fabricated timber construction. All are on reinforced concrete raft foundations, as mining subsidence is likely to occur. The work is being carried out by direct labour. The design was by Mr. H. H. Powell, Regional Architect, under the general direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region.

**Best-Kept Stations Competition for Scottish Main-Line Termini.**—Winners of the Scottish Region Best Kept Stations competition for main-line stations for 1958 were Glasgow St. Enoch in Group A and Aberdeen in Group B. Group A competitors included Edinburgh Waverley, Edinburgh Princes Street, Glasgow Central, Glasgow St. Enoch, and Perth; Group B covers Aberdeen, Dundee Tay Bridge, Dundee West, Glasgow Buchanan Street, Inverness, Glasgow Queen Street, and Paisley Gilmour Street. On February 3, at Regional headquarters, Mr. S. E. Raymond, Chief Commercial Manager, handed cheques of £50 to Mr. R. B. Bowler, Stationmaster, Glasgow St. Enoch, and £25 to Mr. G. Bell, Stationmaster, Aberdeen.

**New Ships for Tilbury-Gravesend Ferry.**—The Eastern Area Board of the B.T.C. has decided to replace the old passenger vessels *Rose*, *Catherine*, and *Edith* on the Tilbury-Gravesend ferry service by three new diesel passenger ferries, to be brought into use early in 1960. It is considered that the demand for vehicular ferries after the Dartford-Purfleet road tunnel is

opened in 1962 will be so small that the continuation of present ferries for road vehicles will not be justified. In the meantime, services will be continued on the present basis with the vessels *Mimie* and *Tessa*. The Commission must apply to be relieved of its statutory obligation to maintain ferry services after the Dartford-Purfleet tunnel opens. Application will probably be made to Parliament in the 1959-60 session.

**New Workshops and Staff Amenities at Heeley Carriage Sidings.**—Work will begin shortly on a new combined workshop and amenity building for Carriage & Wagon, and Carriage Servicing staff at Heeley carriage sidings, Sheffield, Eastern Region. The new building will be two-storeyed and will contain workshops and stores on the ground floor and messrooms, lockers and drying rooms on the first floor. The ground floor will be of traditional brick construction. The first floor will be of pre-fabricated timber units with large glazed windows, and under-cill panels of vitreous enamel. The building was designed by Mr. H. H. Powell, Regional Architect, under the general direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region.

**Elstree & Borehamwood Station Improvements.**—Work on improvements to Elstree & Borehamwood Station, British Railways, London Midland Region, which began recently, includes the building of an additional booking office on the up side of the station with an entrance from Shenley Road. Road and bridge improvements in association with the Hertfordshire County Council form part of the scheme, and a new railway footbridge from the new booking office to the platforms will provide easier access for the increasing number of passengers from the Borehamwood housing estates, on that side of the line. The building will consist of a booking hall, booking office, enquiry and left luggage office, and a staff mess room. The tiled concrete floor will be supported at

### Permanent Way Institution Conversazione



Sir John Elliot, the principal guest, Mr. C. E. Dunton, President of the Permanent Way Institution, and Sir Landale Train, Past President, at the annual conversazione (see our February 6 issue)



street level by two brick walls which will be continued up to carry the timber roof. Panels of varnished pine framing and glass form the external walls. The booking office front will be fully glazed and will have two booking windows. The contractors are Trollope & Colls Limited.

## Forthcoming Meetings

- February 25 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 for 6 p.m. 1959 Continental tour film night.
- February 25 (Wed.).—Railway Discussion Group, at Peterborough Technical College, Eastfield Road, at 6.45 p.m. Paper on "The press and the public," by Mr. Norman Hamilton, Public Relations Adviser, British Railways, Eastern Region, Liverpool Street.
- February 26 (Thu.).—Institution of Railway Signal Engineers, Glasgow Branch, at the St. Enoch Hotel, Enoch Square, Glasgow, C.1, at 6 p.m. Paper on "Relay remote control systems," by Mr. G. I. Foster, M.V.—G.R.S. Limited.
- February 27 (Fri.).—Institution of Locomotive Engineers, at the Dorchester Hotel, Park Lane, London, W.1. Annual luncheon.
- February 27 (Fri.).—Royal Engineers Army Emergency Reserve (Transportation), at the Cafe Royal, Regent Street, London, W.1. Annual dinner.
- March 2 (Mon.).—Institute of Transport, Metropolitan Section, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "Engineering in transport," by Mr. G. F. Sinclair, Technical Services, B.R.S.
- March 3 (Tue.).—Institution of Railway Signal Engineers, York Section, at the Signalling School, Toft Green, York, at 5.30 p.m. Film and talk on cable laying technique by a representative of B.I.C.C. Limited.
- March 3 (Tue.).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Development in overhead electrification of railways as it affects the civil engineer," by Mr. R. E. Sadler.
- March 3 (Tue.).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, Cardiff Section, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "An Englishman's view of the railways of the U.S.S.R.," illustrated, by Mr. R. W. Ibbotson, Assistant (Operating), Western Region, Paddington.
- March 3 (Tue.).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreation Club, Ellis Court, Leeds City Station, at 7 p.m. Paper on "Effects on the track to be expected from the general introduction of diesels and electrics," by Mr. J. C. Roach, Superintendent of Vehicle & Track Division, B.T.C. Research Department, Derby.
- March 3 (Tue.).—Railway Correspondence & Travel Society, Sheffield Branch, at Livesey Clegg House, Union Street, Sheffield, at 7.30 p.m. Paper on "Present-day running on the Midland main line," by Mr. D. Plumb.
- March 4 (Wed.).—Railway Discussion Group, at Peterborough Technical College, Eastfield Road, at 6.45 p.m.

Paper on "Timber and timber research," by Mr. Bernard Jay, Timber Development Association Limited, London.

- March 5 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "I. K. Brunel—The man and his work," illustrated, by Sir Allan Quartermaine.
- March 5 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. "A model journey to North America," a talk by Mr. B. Leslie Young.
- March 6 (Fri.).—Stephenson Locomotive Society, Scottish Area, at 25, Charlotte Square, Edinburgh, at 7 p.m. A talk by Mr. Norman McKillop on his recent visit to Canada.
- March 6 (Fri.).—The Railway Club, at the Royal Scottish Corporation, Fetter Lane, E.C.4, at 7 p.m. Paper on "Sixty years' development of London Transport," by Mr. Charles E. Lee.
- March 9 (Mon.).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "The future of British Railways," by Mr. David Blee.

## Railway Stock Market

There was much uncertainty in stock markets, with buyers cautious because of a tendency to await developments in international affairs. Movements on most sections were small. Sentiment is tending to be buoyed up by expectations of important tax reductions in the April Budget. Meanwhile, there is persistent talk of a coming cut in the bank rate to 3½ per cent.

Canadian Pacific fluctuated with the trend of Wall Street, but at \$54 were the same as a week ago; the 4 per cent preference stock strengthened to 53, but the 4 per cent debentures eased to 65½. White Pass shares have strengthened from \$13½ to \$14.

Antofagasta ordinary stock declined from 14½ to 13½ and the preference stock from 28 to 27½ on the decision to suspend operations of the railway in Bolivia, because of the losses incurred in working on a basis which did not allow rising costs to be met by dearer freights. The 5 per cent (Bolivia) debentures were again quoted at 94. Mexican Central "A" bearer debentures were 76. San Paulo Railway 3s. units again quoted at 2s. and Brazil Railway bonds strengthened afresh to 7½. Paraguay Central prior debentures were quoted at 12½, and Guayaquil & Quito assented bonds at 7½. Costa Rica ordinary stock was 13. Chilean Northern first debentures were 54. In other directions, International of Central America common shares were quoted at \$22½ and the preferred stock at \$109.

West of India Portuguese ordinary stock held its recent further advance to 104 and the 5 per cent debentures were 90.

Elsewhere, Nyasaland Railways ordinary shares were firm at 15s. 6d. with the 3½ per cent debentures 62½. Emu Bay 4½ per cent debentures were quoted at 37 and Midland of Western Australia income debentures at 12½.

Steadiness was shown by shares of locomotive builders and engineers with G. D. Peters again 27s. 6d., Beyer Peacock 5s. shares 8s. 4½d. and Charles Roberts 5s. shares 9s. 9d. Westinghouse Brake shares

changed hands around 41s. 9d. Wagon Repairs 5s. shares were 10s. 9d. and Gloucester Wagon 10s. shares 18s. 1½d., while Birmingham Wagon firmed up from 17s. 6d. to 18s., but North British Locomotive eased from 12s. 7½d. a week ago to 12s. 4½d.

English Electric at 62s. 6d. were good, following the results and the decision to distribute a one-for-two scrip issue. These shares have risen from 59s. 9d. a week ago. Associated Electricals were 55s. compared with 55s. 3d. a week ago and General Electric 33s. compared with 32s. 9d. Crompton Parkinson 5s. shares were again 12s. 1½d. Tube Investments have not held best levels, but at 80s. 9d. were higher than a week ago, and in other directions, G. & J. Weir 5s. shares strengthened to 17s. 6d. Renold Chain shares were 43s. 6d. and T. W. Ward strengthened afresh from 83s. 6d. to 84s.

British Timken were 59s., George Cohen 5s. shares 11s. 9d. Blaw Knox 5s. shares changed hands around 26s. 9d., while Davy & United Engineering have advanced afresh from 90s. 3d. a week ago to 92s. 9d. Vickers were firmer at 34s. 1½d., Cammell Laird 5s. shares steady at 9s. 1½d. and in other directions, Dowty Group rose further from 43s. 9d. a week ago to 44s. 6d. Pressed Steel 5s. shares were maintained at 24s. 6d. Vokes 4s. shares changed hands around 18s. 1½d., Mather & Platt were 48s. and B.I. Cables 48s. 3d. Johnson & Phillips shares were active on vague but entirely unconfirmed talk in the market of deal rumours. After rising, the shares receded to 26s.

## OFFICIAL NOTICES

**RAILWAY SURVEYOR-DRAUGHTSMAN** required by Railway Siding Constructional Engineers. Applicants must have trained in Railway Draughtsmanship, be able to survey existing trackwork, plot same to working scale and be fully conversant with theodolite and level practice. Men (not over 30 years of age) with knowledge of Railway Standard Specification Layouts preferred, and only those who have specialised in the survey and design of Railway Trackwork in the United Kingdom need apply. Conditions of employment include provision of car, all travelling and general expenses, five-day week on rota system, comprehensive superannuation scheme, etc.—Write in first instance, stating age, experience and salary required, to Sidings Construction Department Manager, Thos. W. Ward Limited, Albion Works, Sheffield, 4.

### MALAYAN RAILWAY ADMINISTRATION

**MECHANICAL ENGINEERS** are required by the Malayan Railway Administration, Federation of Malaya on contract for three years in the first instance.

#### QUALIFICATIONS:

- Corporate Membership of the Institution of Mechanical Engineers or its equivalent.
- At least ten years post qualifying experience in Railway organisation in any of the following:—
  - Workshops engaged in the building or repair of locomotives, coaching and goods stock or maintenance of mechanical plants or equipment;
  - OR
  - Running depots engaged in the running maintenance of locomotives, carriages and wagons.
- Thorough experience in the maintenance and repair of diesel locomotives is essential.
- Ability to supervise a large labour force.
- Considerable administrative and organising ability.

#### SALARY:

£2,268 p.a. single man, £2,618 p.a. married man, £2,849 p.a. married man with family.

#### GRATUITY:

£510 6s. 0d. per year of completed service. Free first-class passages. Liberal leave on full salary. Partly furnished quarters at reasonable rent or housing allowance in lieu.

APPLICATIONS should be addressed to the High Commissioner for the Federation of Malaya (Recruitment and Personnel Division), Malaya House, 57, Trafalgar Square, London, W.C.2, from whom further details and application forms may be obtained.

